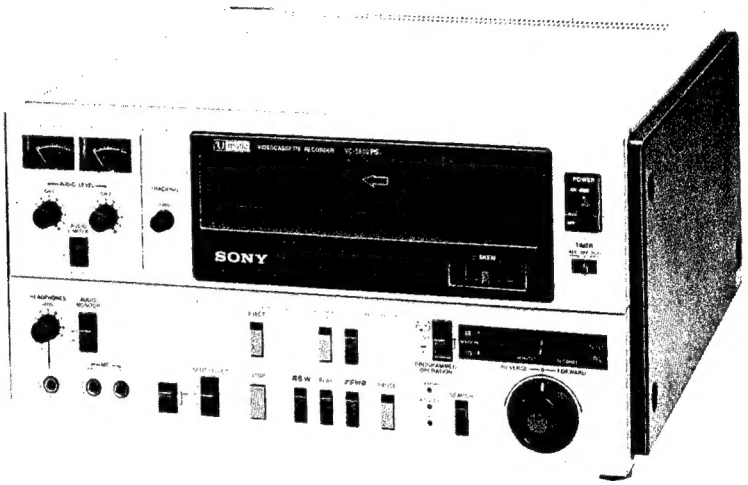
U-matic
VIDEOCASSETTE RECORDER

VO-5800PS

Revised-3

This manual includes the informations of Supplement-1, 2 and 3 that have been published already.



SONY®
SERVICE MANUAL

SPECIFICATIONS

GENERAL

Video recording: Rotary two-head helical scan system
Luminance: fm recording
Color signal: converted subcarrier direct recording

Video signal system: CCIR standards, PAL or SECAM color

Power requirements: 110 – 240 Vac ±10%, 50/60 Hz ±10%

Power consumption: 75 W with RM-440

Operating position: Horizontal

Storage temperature: –20°C to +60°C (–4°F to +140°F)

Operating temperature: 5°C to 40°C (41°F to 104°F)

Dimensions: Approx. 446 x 237 x 518 mm (w/h/d)
(17-5/8 x 9-3/8 x 20-1/2 inches)
including projecting parts and controls

Weight: Approx. 24 kg (53 lb)

VIDEO

VIDEO IN: BNC type x2
1.0 V(p-p) +1.0; –0.5 V(p-p), 75 ohms, unbalanced, sync negative

DUB IN: 7 pin, x1

TV: 8 pin, x1

VIDEO OUT: BNC type, x1
1.0 V(p-p) ±0.2 V(p-p), 75 ohms, unbalanced, sync negative

DUB OUT: 7 pin, x1

TV: 8 pin, x1

Horizontal resolution: Monochrome mode: 340 lines
Color mode: 250 lines

Signal-to-noise ratio: Monochrome mode: more than 48 dB
Color mode: more than 46 dB

Subcarrier

SC IN: BNC type, x1
2 V (0.5 – 3 V) (p-p), 75 ohms, unbalanced, sync negative

Recording level: Automatic

AUDIO

LINE CH-1, CH-2 IN: Phono jack, x 1 in each
–10 dB, 47 Kohms

MIC CH-1, CH-2: Phone jack, x 1 in each
–60 dB, for 600 ohm microphones

TV: 8 pin, x1

LINE CH-1, CH-2 OUT: Phono jack, x 1 in each
–5 dB (with 47 Kohm load)

AUDIO MONITOR: Minijack, x 1
–5 dB (with 47 Kohm load)

HEADPHONES: Stereo phone jack, x1
for 8 ohm headphones
Level: adjustable (–24 dB to –46 dB)

TV: 8 pin, x1

Signal-to-noise ratio: Better than 48 dB (at 3% distortion)
Both channels 1 and 2

Frequency response: 50 – 15,000 Hz (channels 1 and 2)

Recording level adjustment:
Manual, with audio limiter

TAPE TRANSPORT

Tape speed: 9.53 cm/sec (3-3/4 ips)

Recording or playback time:
60 min (with KCA-60)

Fast forward and rewind time:
within 4 min (with KCA-60)

Wow and flutter: ±0.25% (DIN)

Tape compatibility: U-matic video cassette tape

Usable tape: KCA, KCS type tape

SPECIAL FUNCTIONS

Pause: A still picture is obtained, with long pause function

Search: Possible (still, and 1/30 to 5 times of normal speed in forward and reverse directions)
Picture search is possible with the RM-440 when the KCS type tape is used.

Tracking control: Possible

Skew control: Possible

Sync system: Internal and external

Vertical-interval switcher:
Internal

Dropout compensator: Internal

Overlap of recording using the PAUSE button:
1 ±1 frame

Programmed operation: Possible (The memory will be kept for three days.)

ACCESSORIED SUPPLIED

AC power cord (1)

RECOMMENDED VIDEO EQUIPMENT AND ACCESSORIES

Editing Control Unit RM-440
Color Video Monitor Sony CVM and PVM series
Color Video Camera Sony DXC series
Auto Search Control RX-353CE, RX-303CE
Remote Control Unit RM-500, RM-580
Cleaning Cassette KC-1C
Remote Control Cable RCC-5F
Dubbing Cable VDC-5 (5 m)
Monitor Connecting Cable VMC-3P (3 m), VMC-5P (5 m), VMC-10P (10 m)
Video Responder System VRC-100, VRS-110, VRD-100, VRP-100
RF kit RFK-660UCE/660UB/660UF/660CH
Multi Remote Control Unit RM-555
Video and Audio Signal Distributor DA-500
Video and Audio Switcher VCS-500
VTR Selector RM-V5

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SECTION 1
GENERAL DESCRIPTION

1-1. FEATURES

Automatic editing system: Together with a VO-5850P/ VO-5850S Videocassette Recorder and a RM-440 Automatic Editing Control Unit, the VO-5800PS can compose an automatic editing system.

Smooth transition between scenes: The signal from another videocassette recorder or a video camera can be edited by using the PAUSE button, which assures a smooth transition between scenes. It is also possible to assemble two video signals by switching the VIDEO-1/VIDEO-2 select switch.

Search operation: Governed by the search dial, playback at 1/30 to 5 times normal speed is possible in both forward and reverse directions. When a KCS cassette is used, picture search (at about 10 times normal playback speed) is also possible with the search dial on the optional remote control unit.

Dubbing connectors: Connectors for editing or duplicating video signals are included.

LED time counter: The time counter reads the CTL signals recorded on the tape and the LEDs indicate the point on the tape in seconds and minutes.

Automatic transport operation: The PROGRAMMED OPERATION selector allows you to locate a particular point on the tape easily and quickly and also to play back a portion on the tape repeatedly.

Still picture: When the tape is stopped with the PAUSE button during playback, a still picture can be obtained. The guard band noise is limited to the upper or lower part of the screen so that the still picture is easy to see.

Long pause mode: When the tape is stopped in the pause mode for a long period of time, the machine automatically enters the long pause mode to avoid possible damage to the tape.

Moisture detector: When moisture condenses on the video head drum, the moisture detector is activated and the machine stops to avoid possible tape damage. The AUTO OFF indicator lights to indicate moisture condensation.

Remote control and auto search: The machine can be remotely controlled with an optional remote control unit. Any point on the tape can be searched for and played back automatically using an RX-353CE or RX-303CE Auto Search Control Unit.

Connectors for time base corrector: The best possible playback picture can be obtained when a time base corrector (optional) is connected.

Logic control: The logic control system allows you to change modes without pressing the STOP button.

Full automatic rewind: The tape is automatically rewound to the beginning when it runs to the end.

Automatic control of video recording level: The automatic gain control circuit maintains the proper video level, assuring optimum video recording.

Limiter function: The audio recording level is adjusted manually. The limiter circuit minimizes audio distortion at the program peaks.

Two audio tracks: Two audio tracks permits recording and playback of stereo sound or bilingual program material.

Audio dubbing: Audio (commentary, music, etc.) may be added to video recording made earlier.

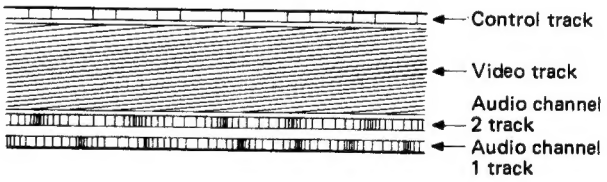
Timer operation: With the aid of a timer (optional), recording and playback can be started and stopped when the recorder is unattended.

Stable playback picture: The servo system using a direct drive capstan motor and drum motor, and the newly developed digital servo IC assure a stable tape transport which reduces tape jitter.

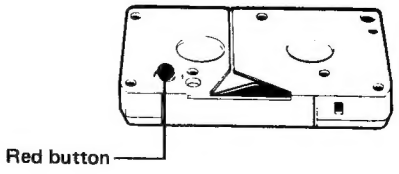
No power adaptation and low power consumption: Thanks to Sony's newly-developed high efficiency switching regulator, the unit can be operated with a wide range of power voltages and frequencies without power adaptation. Power consumption is low.

1-2. NOTE ON VIDEOCASSETTE TAPE

The video and audio signals are recorded using the full width of the tape as shown below. Because of this, the tape cannot be recorded in the reverse direction.

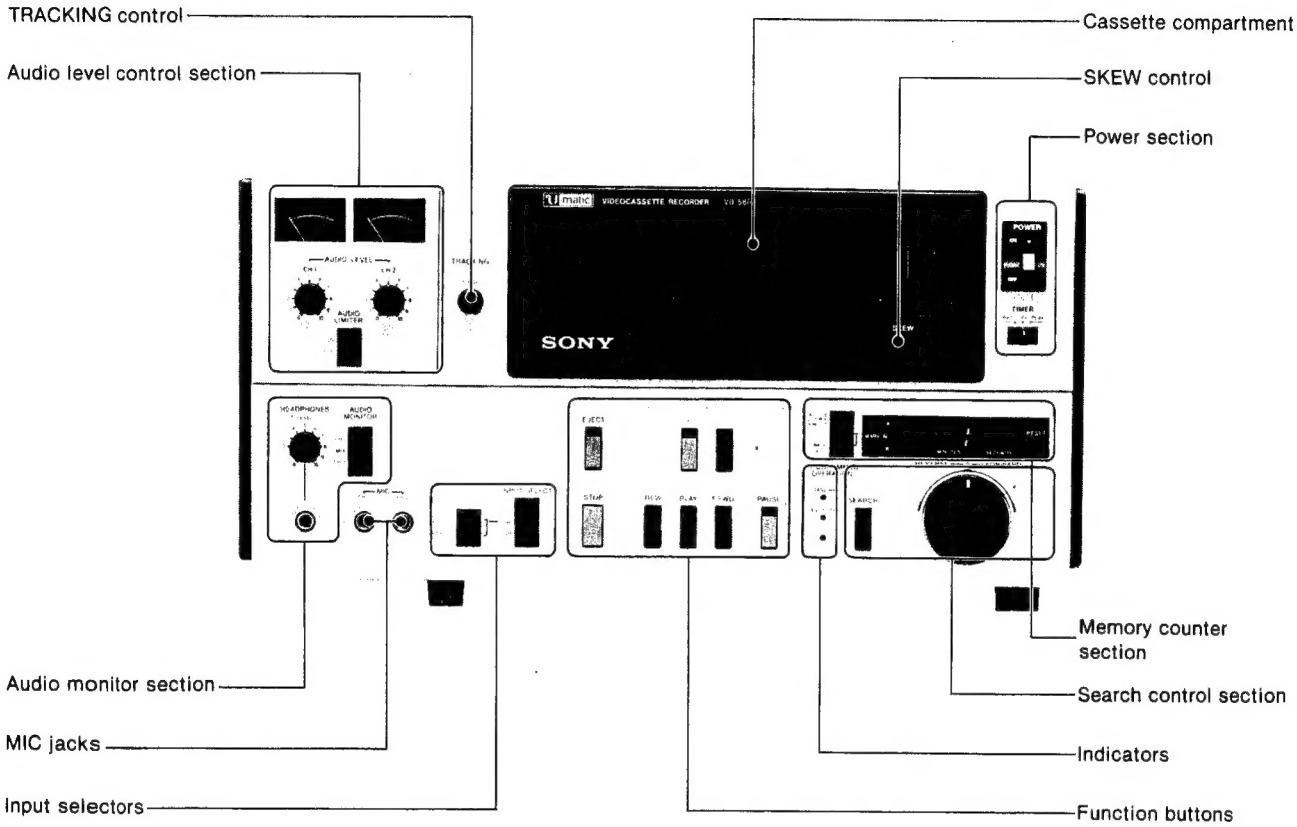


If you want to safeguard the material recorded on a cassette, remove the red button on the bottom so it cannot be recorded even if the REC button is pressed. Accidental erasure is now impossible. If you later decide to record on this cassette, replace the button. If a cassette without a red button is inserted into the videocassette recorder, the E-to-E mode picture does not appear on the monitor screen.



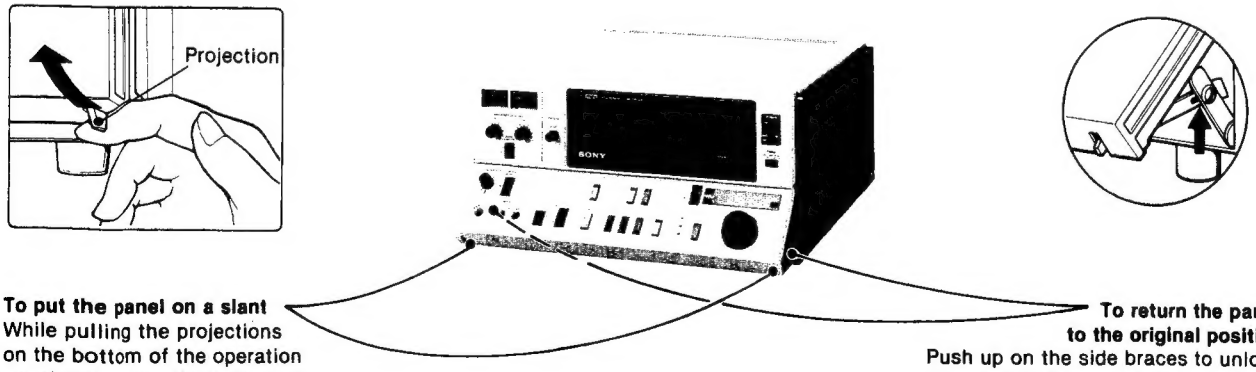
1-3. LOCATION AND FUNCTION OF CONTROLS

FRONT PANEL



To put the Operation panel on a slant

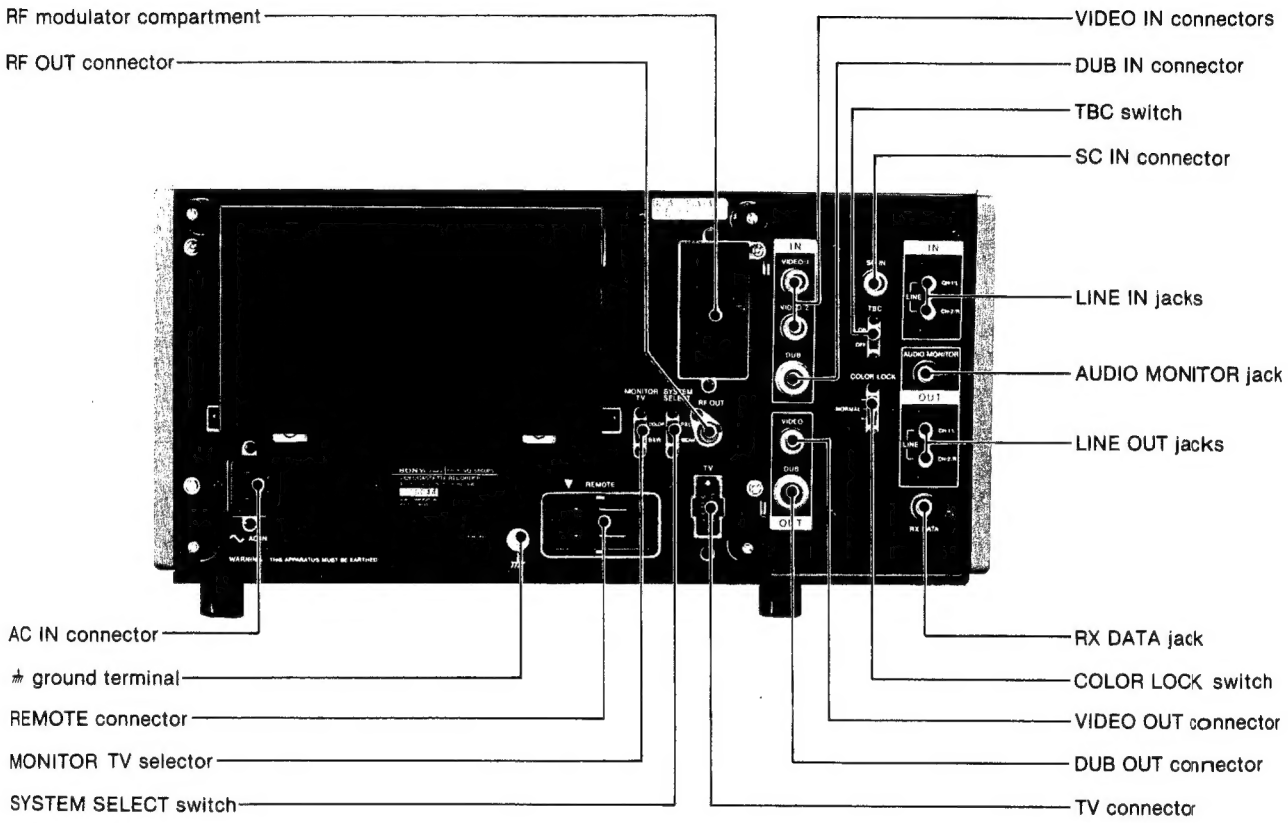
The lower half of the operation panel can be pulled out as shown below.



To put the panel on a slant
While pulling the projections on the bottom of the operation panel out, swing the bottom of the panel out and up until the side braces lock.

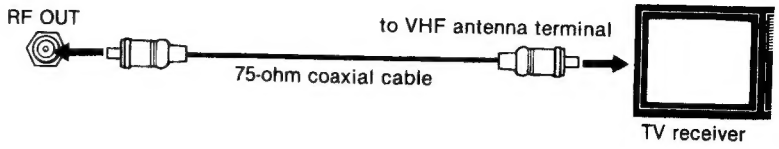
To return the panel to the original position
Push up on the side braces to unlock them and swing the panel down and back until it clicks into place.

REAR PANEL


RF modulator compartment
RF OUT connector
VIDEO IN connectors
DUB IN connector
TBC switch
SC IN connector
LINE IN jacks
AUDIO MONITOR jack
LINE OUT jacks
RX DATA jack
COLOR LOCK switch
VIDEO OUT connector
DUB OUT connector
TV connector
AC IN connector
⏚ ground terminal
REMOTE connector
MONITOR TV selector
SYSTEM SELECT switch

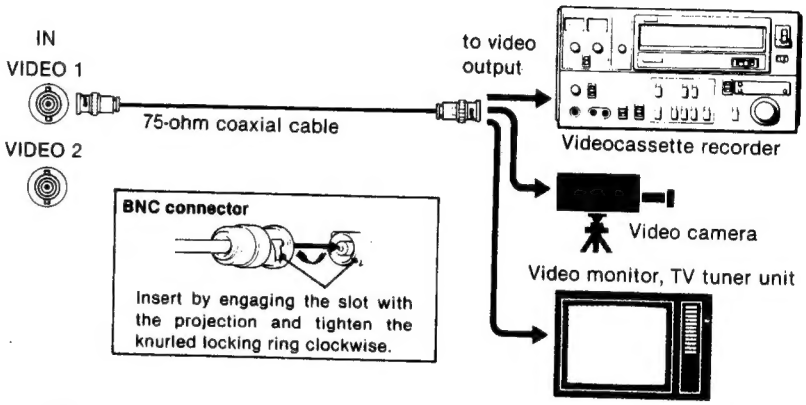
1-4. CONNECTIONS AND SELECT SW SETTING

RF OUT connector
The output signal of the RF modulator, if it is inserted, is fed out here. Using this connector, you can see a picture on a conventional TV receiver.

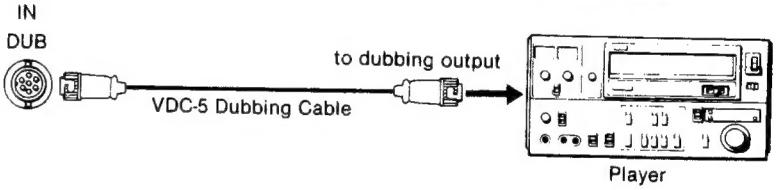


RF modulator compartment
Insert an RF modulator* (optional) here to see a picture on a conventional TV receiver.
*An RF (Radio Frequency) modulator converts the signal to be fed to the TV receiver into a UHF channel signal.

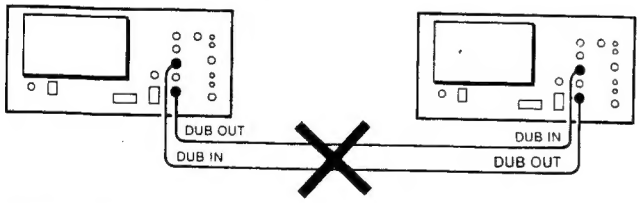
VIDEO IN 1 and 2 connectors (BNC type)
Connect the video signal to be recorded to these connectors.

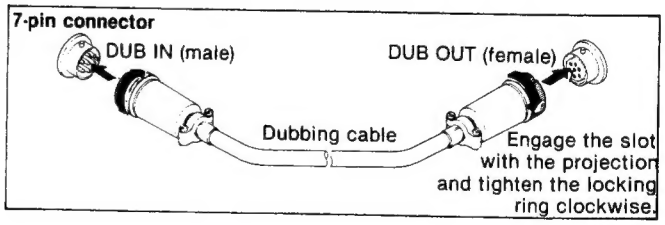


DUB IN connector (7 pin)
When duplicating a tape using a player with a dubbing connector, the video signal is connected using this connector.



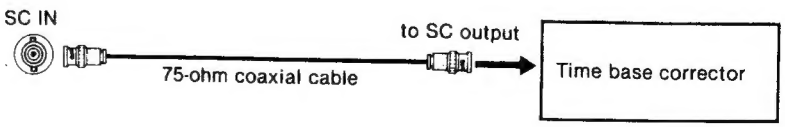
Note on DUB connectors
Do not connect the dubbing connectors in parallel.



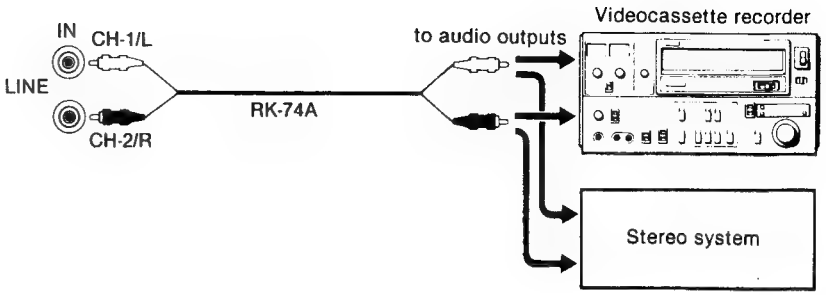


TBC switch
Usually set to OFF.
When the time base corrector (optional) is used, set this switch to ON.

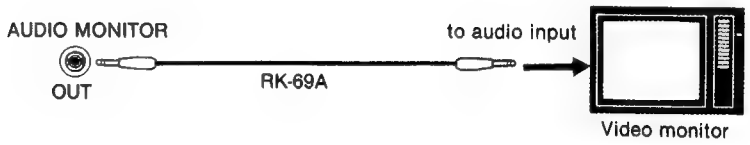
SC IN (subcarrier input) connector (BNC type)
Connect the subcarrier from the time base corrector here.



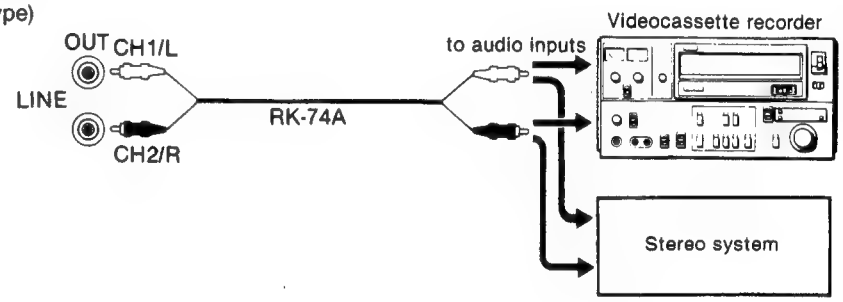
LINE IN (audio line input) jacks (phono type)
Connect the audio signal to be recorded here.



AUDIO MONITOR jack (mini type)
Connect to the audio input jack on the video monitor. The signal selected by the AUDIO MONITOR switch on the front panel is output here.

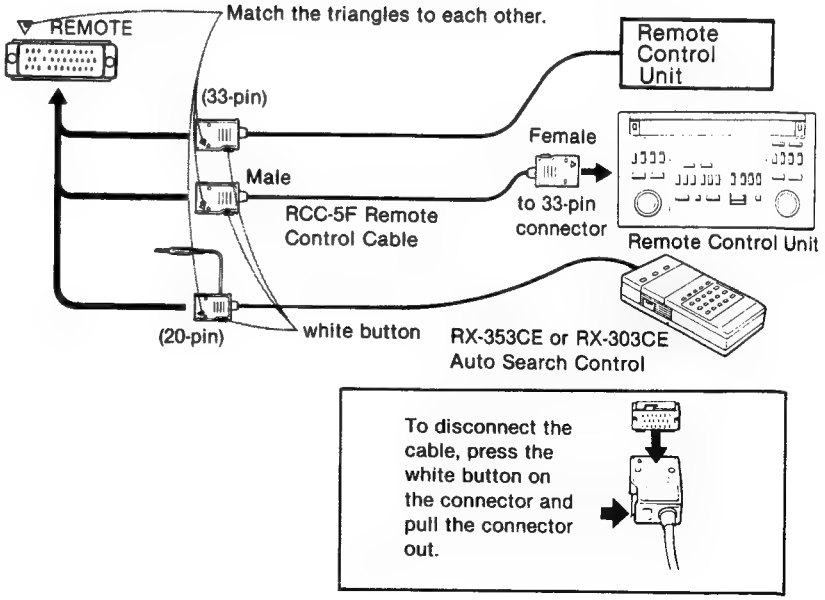


LINE OUT (audio line output) jacks (phono type)
The signals recorded on the audio channel 1 and audio channel 2 are output here.

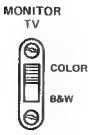


AC IN connector
Connect the supplied ac power cord here.

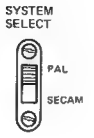
REMOTE connector (33-pin)
Connect an optional editing control unit, auto search control unit or remote control unit to this connector.
- Before connecting the remote control cable, check whether the connector is male or female.
- The REMOTE connector accepts a 20-pin connector. A plug adaptor is unnecessary.



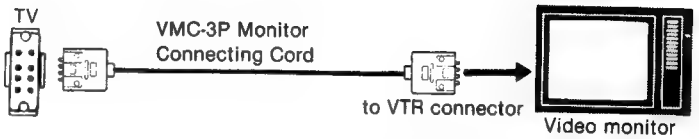
MONITOR TV selector
Set this selector according to the type of video monitor used.
COLOR : For a color monitor.
B & W : For a black and white monitor.



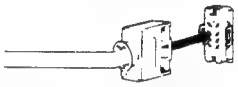
SYSTEM SELECT switch
Set this selector according to the video signal system adopted in your area.
PAL : For the PAL color system
SECAM : For the SECAM color system



TV connector (8-pin)
Connect to the 8-pin VTR connector of a video monitor.
The video and audio input and output connections can be made with a single cable. When this connector is used, the audio signal will be recorded on audio channel 2. The channel selected by the AUDIO MONITOR switch will be heard through the speaker on the video monitor.

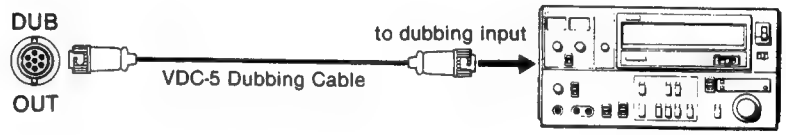


Be sure that the connectors are properly aligned before connecting the cable.

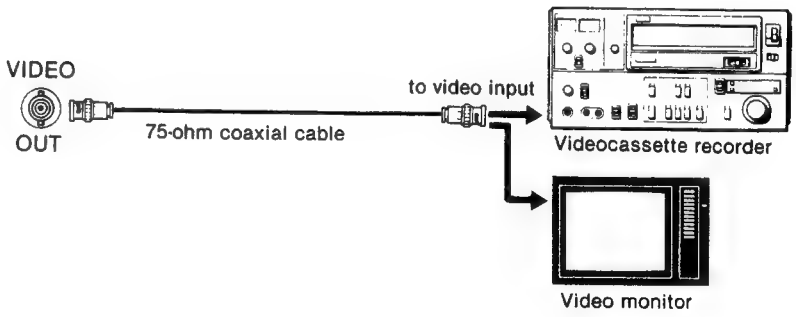


To remove, press the buttons on both sides of the connector.

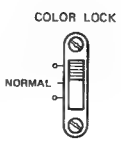
DUB OUT connector (7-pin)
When duplicating a tape using a recorder with a dubbing connector, the video signal is connected using this connector.



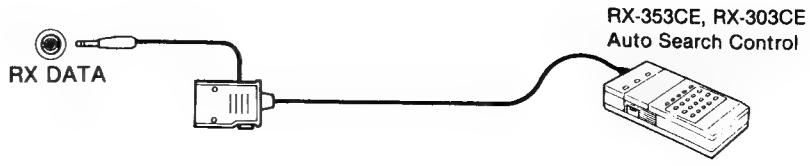
VIDEO OUT connector (BNC type)
The video signal is output here.



COLOR LOCK switch
As a rule, set to NORMAL. If the playback picture has no color or if the hue is abnormal, set the switch to the upper or lower position marked [•].

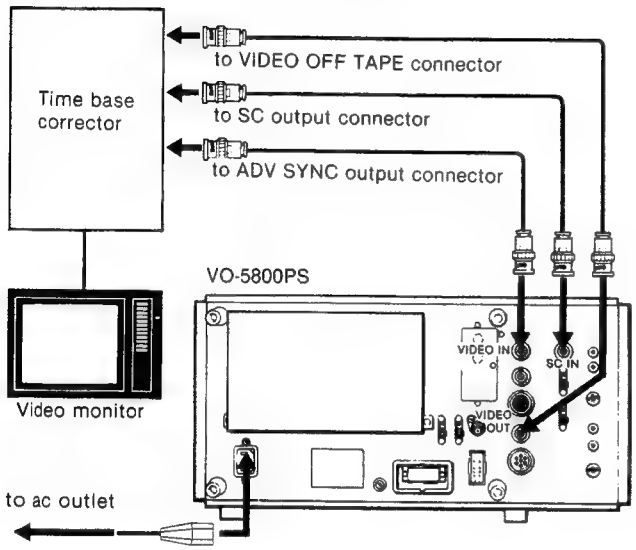


RX DATA jack (mini type)
For recording the data and reading the data recorded on the tape by the RX-353CE.



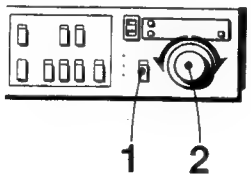
1-5. TIME BASE CORRECTOR

The best possible playback picture can be obtained when a time base corrector is used. Connect the time base corrector as illustrated below, and set the TBC switch to ON.
●For details on the operation of the time base corrector, refer to the instruction manual furnished with it.



1-6. SEARCH OPERATION

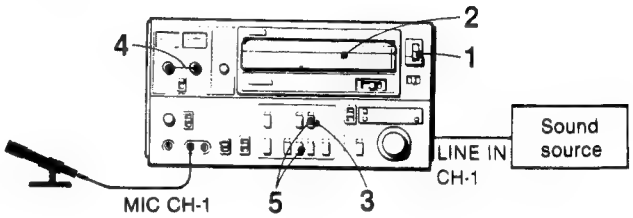
A particular point can be quickly located with the search dial.
Press the SEARCH button and turn the search dial to look for the point you want to locate. The search dial allows you to vary the playback speed from 1/30 to 5 times the normal playback speed in both directions. Set the search dial to the center "0" position at the point. The tape stops and a still picture can be seen on the monitor.



Notes
● During search operation, the servo system is not locked, so guard band noise flows on the playback picture.
● When the video signal is connected using the DUB connectors, the E-to-E mode picture on the monitor connected to the recorder may roll vertically when the player is in the pause or search mode.
● When the video signal is connected using the VIDEO connectors, the color of the E-to-E mode picture on the monitor connected to the recorder may be lost when the player is in the search mode. If this happens, set the COLOR LOCK switch to either upper or lower position.
● If the TBC switch is set to ON but a time base corrector is not connected, the vertical sync does not lock in the search mode and the picture rolls vertically.

1-7. DUB AUDIO

You can add a sound such as music or commentary on the tape on which the video signal has already been recorded. The new sound is recorded on the audio channel 1, and when the new sound is recorded, the previous sound will be erased.



Operation
1. Turn the power on.
2. Insert a recorded video cassette.
3. Press the DUB/CH-1 button.
4. Adjust the audio recording level.
5. Press the DUB/CH-1 and PLAY buttons simultaneously. The recorder enters the audio dubbing mode.

To stop dubbing, press the STOP button.

● If both a microphone and another audio source are connected simultaneously, only the sound from the microphone will be recorded.
● When a microphone is used, avoid pointing the microphone at the monitor or turn the sound volume on the monitor down, to prevent acoustic feedback (a whistle-like sound).

To record sound on the middle of the tape
Play the tape to the point at which sound is to be added and press the PAUSE button to stop the tape momentarily.
Press the DUB/CH-1 button, then the PAUSE button again. The recorder will enter the audio dubbing mode.

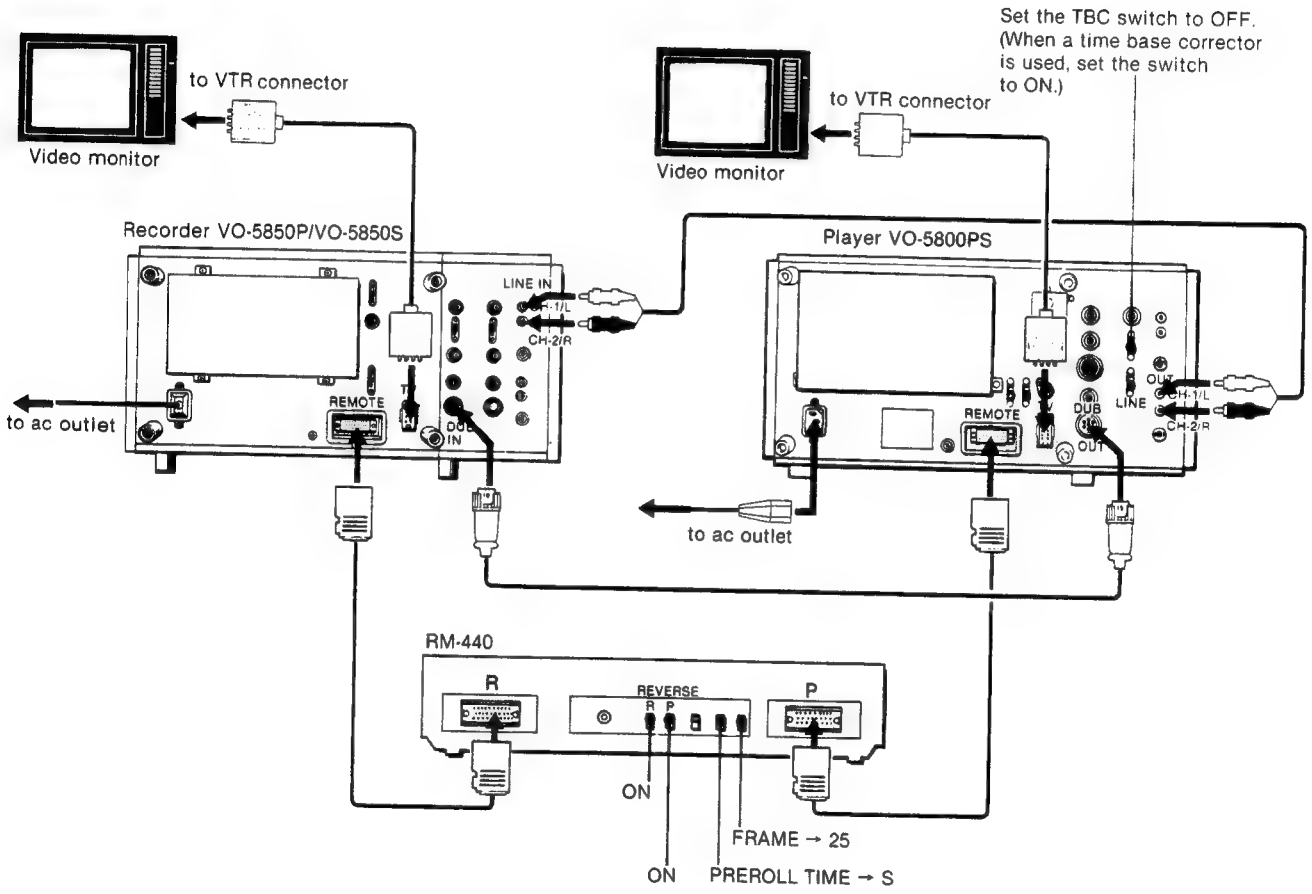
1-8. AUTOMATIC EDITING

When the RM-440 Automatic Editing Control Unit and the VO-5850P/VO-5850S are used with the VO-5800PS, accurate and automatic tape-to-tape editing is possible. Once the edit-in and edit-out points have been memorized on the RM-440, the editing can be done simply by pressing the AUTO EDIT button.

Almost all functions of the RM-440 can be activated when the RM-440 is used with the VO-5800PS. However, picture search is possible only when a KCS cassette is used.

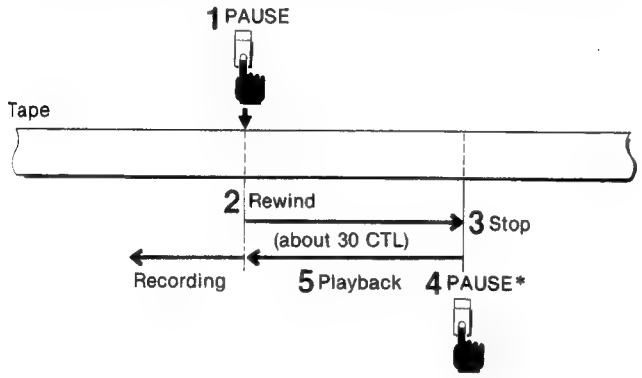
- During picture search, the picture may become monochrome or roll vertically on some monitors. If this happens, release the picture search mode by turning the search dial.

CONNECTIONS



1-9. SMOOTH TRANSITION BETWEEN SCENE

Using the PAUSE button, you can smoothly add the scenes one after another.
Press the PAUSE button at the end of a scene, and the tape automatically rewinds about 1 second's worth of tape and stops (pause mode). The E-to-E mode picture remains on the monitor screen, but not recorded. To start recording the next scene, press the PAUSE button again. The tape runs in the playback mode to the point where the PAUSE button has been pressed to stop the tape, and the recorder enters the record mode. Thus the scenes can be continued smoothly.

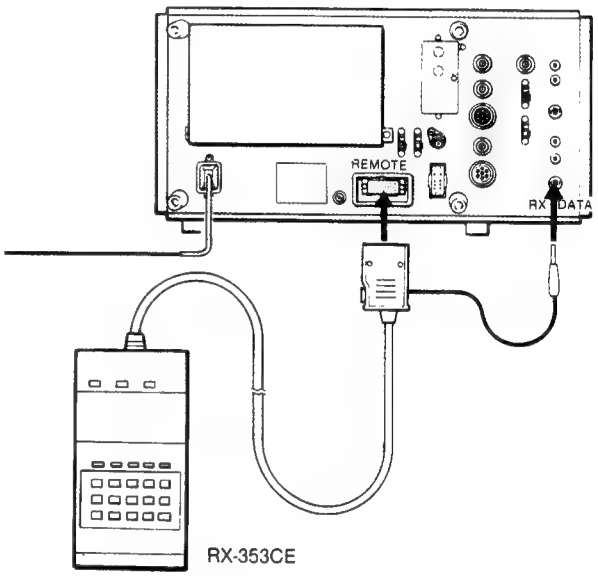


Note
Do not disconnect the program source when the tape is in the pause mode or the scenes may not be smoothly continued.

The long pause mode
If the pause mode continues for about 8 minutes, the tape around the head drum automatically slackens to protect the video head and the tape.
This is called the long pause mode.

1-10. AUTO SEARCH CONTROL

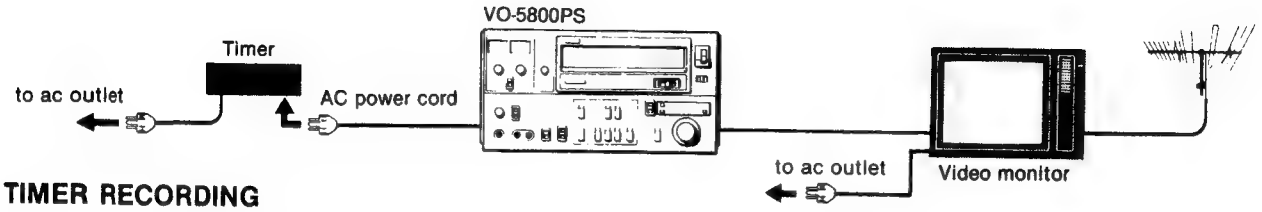
The RX-353CE devides the recorded material into segments. A segment has its own number and the beginning and end position on the tape, and we call them the segment data. The segment data can be recorded at the beginning of the audio channel 1 on the tape, and be kept even if the RX-353CE is disconnected or the power of the recorder is turned off. So the data can be used repeatedly.



Notes
- The data recording level is automatically adjusted. So the level adjustment is not necessary.
- Do not run the tape with the function buttons or search dial on the VO-5800PS when the RX-353CE is used. This is because the indication on the tape position indicator of the RX-353CE and the actual tape position do not correspond correctly when the VO-5800PS is used to run the tape.

1-11. TIMER OPERATION

Using an optional timer, you can start and stop recording and playback while the recorder is unattended.



TIMER RECORDING

1. Turn the recorder on and make preparations for recording.
2. Set the time to start and stop recording on the timer.
3. Set the TIMER switch to REC.

The recording will begin at the time set on the timer.

- When the TIMER switch is set to REC, the function buttons other than the STOP button cannot function. Also the STOP button cannot also function during the tape being threaded just after the power is turned on.
- When the timer recording is finished, be sure to set the TIMER switch to OFF. If the POWER switch is set to ON with the TIMER switch remained to REC, the recording will automatically begin and the recorded material will be erased.

TIMER PLAYBACK

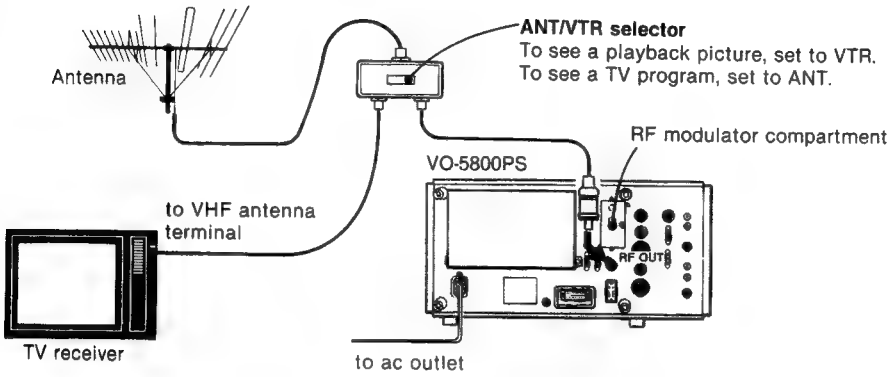
1. Turn the recorder on and make the preparations for playback.
2. Set the time to start and stop playback on the timer.
3. Set the TIMER switch to PLAY.

The playback will begin at the time set on the timer.

1-12. TO SEE A PICTURE ON A TV RECEIVER

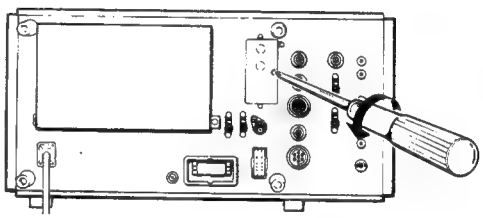
A playback picture can be seen on a conventional TV receiver when an RF modulator (optional) is installed into the VO-5800PS.
It is, of course, possible to see a TV program as usual.

CONNECTIONS

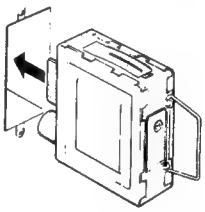


INSTALLATION OF AN RF MODULATOR

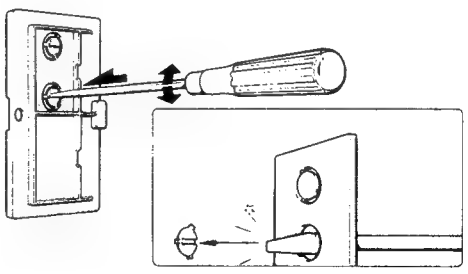
1. Loosen the screw on the RF modulator compartment, and remove the lid.



2. Install the RF modulator into the compartment aligning the direction properly.



3. Replace the lid.



- Push to break off the hole and the channel adjusting screw can be reset without removing the RF modulator compartment lid.
- For details, please refer to the instruction manual furnished with the RF kit.

OPERATION

1. Set the ANT/VTR selector on the antenna selector to VTR.
2. Turn the TV receiver on, and set the channel to the output channel of the RF modulator.
3. Turn the recorder on.
4. Insert a recorded video cassette.
5. Set the AUDIO MONITOR switch to the appropriate position.
6. Press the PLAY button. You can see a playback picture on a TV receiver.

1-13. PROGRAMMED OPERATION

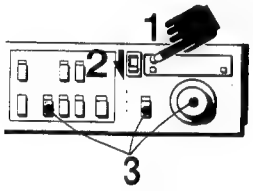
Using the MARK IN A and B buttons and the PROGRAMMED OPERATION switch, you can locate a particular point quickly or play a particular part repeatedly.

- You can memorize only one point on each MARK IN A or B button. If the button is pressed several times, only the last point will be memorized.
- The memory of the MARK IN A and B buttons are cancelled when the RESET button is pressed and the "00 00" will be memorized on both buttons.
- The PROGRAMMED OPERATION switch should be set to the OFF or $\overset{}{\underset{A}{}}$ position when you memorize the point on the MARK IN A or B button.

To locate a particular point

1. Press the MARK IN A button at the desired point.
2. Set the PROGRAMMED OPERATION switch to $\overset{}{\underset{A}{}}$.
3. Run the tape in the rewind or search mode. The tape will stop at the point where the MARK IN A button was pressed.

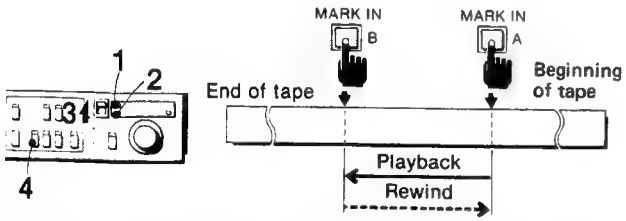
- When the tape runs in the search mode, a still picture can be seen when the tape stops.



To repeat a particular part

1. Search for a point from where the playback is to begin and press the MARK IN A button to memorize the point.
2. Search for a point where the playback is to stop and press the MARK IN B button to memorize the point.
3. Set the PROGRAMMED OPERATION switch to $\overset{A}{\underset{}{\rightleftarrows}}\overset{B}{}$.
4. Press the REW button and the part between the points memorized on the MARK IN A and B buttons are played back repeatedly.

To stop the playback, press the STOP button.

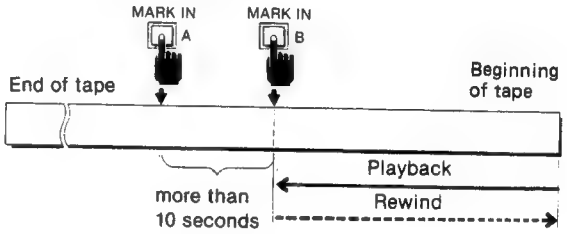


- The video signal or the CTL signal should be recorded for more than 5 seconds after the point which is memorized on the MARK IN B button.

To repeat between the beginning of the tape and a particular point

1. Search for a point where the playback is to stop and memorize the point on the MARK IN B button.
2. Play the tape for more than 10 seconds, stop the tape and press the MARK IN A button.
3. Press the REW button.
4. Set the PROGRAMMED OPERATION switch to $\overset{A}{\underset{}{\rightleftarrows}}\overset{B}{}$. The tape rewinds to the beginning of the tape, then the recorder plays back the designated portion on the tape repeatedly.

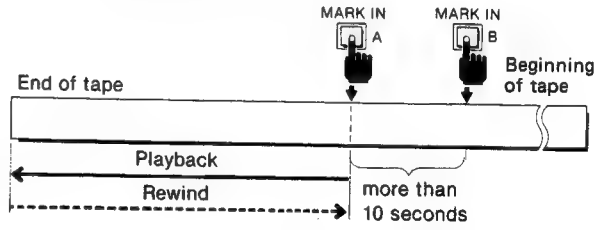
To stop the playback, press the STOP button.



To repeat between a particular point and the end of the tape

1. Search for a point from where the playback is to begin and press the MARK IN A button.
2. Rewind the tape more than 10 seconds by watching the time counter, stop the tape and press the MARK IN B button.
3. Play the tape.
4. Set the PROGRAMMED OPERATION switch to $\overset{A}{\underset{}{\rightleftarrows}}\overset{B}{}$ The tape is played back to the end and rewinds to the point where the MARK IN A button was pressed, and the playback of the designated portion on the tape is repeated.

To stop the playback, press the STOP button.

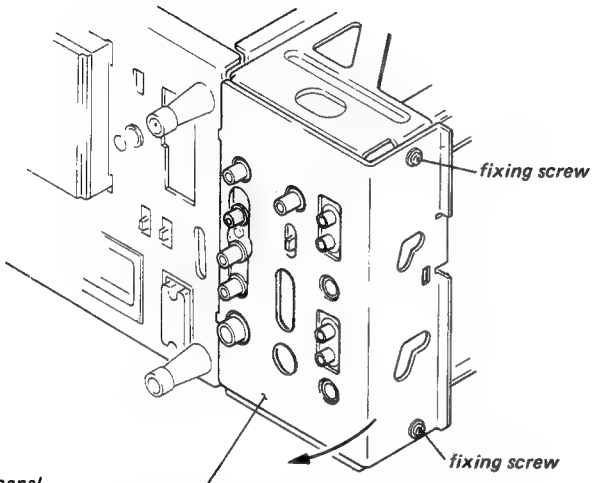


To check the memory on the MARK IN button.

1. Press the STOP button.
2. Set the PROGRAMMED OPERATION switch to $\overset{A}{\underset{}{\rightleftarrows}}\overset{B}{}$.
3. Press the MARK IN A or B button, and the memory on that button will be displayed on the time counter.

Memory on the MARK IN A and B buttons

The memory on the MARK IN A and B buttons and the display on the time counter will be kept for three days even if the power is turned off.



Remove the two fixing screws and move the rear panel in the arrow direction.

ntrol panel

e function control panel on a slant. ve the AUDIO and TRACKING e knobs and five fixing screws, and emove the level control panel.

nob

bs,

2-2. CASSETTE-UP COMPARTMENT REMOVAL AND INSTALLING PROCEDURES

(1) Remove the upper panel and right side ornamental panel.

(2) Disconnect the connector of cassette-up compartment.

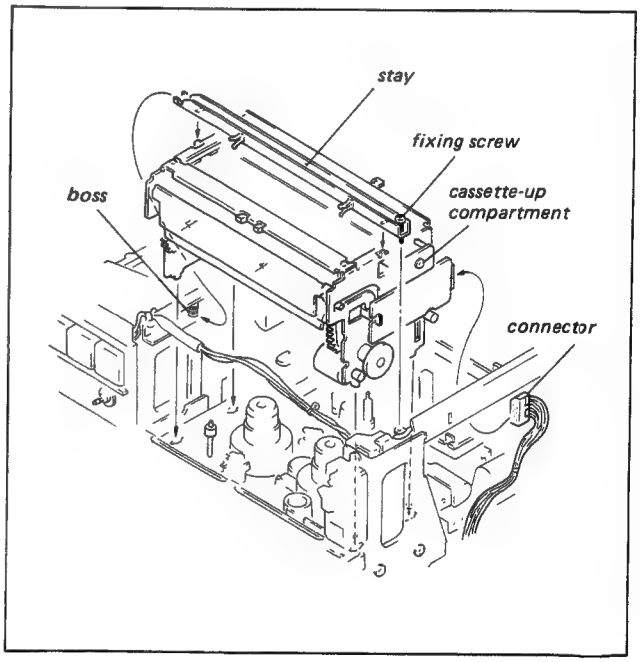
(3) Disconnect the harness from the stay.

(4) Loosen the fixing screw of the right-end of stay.

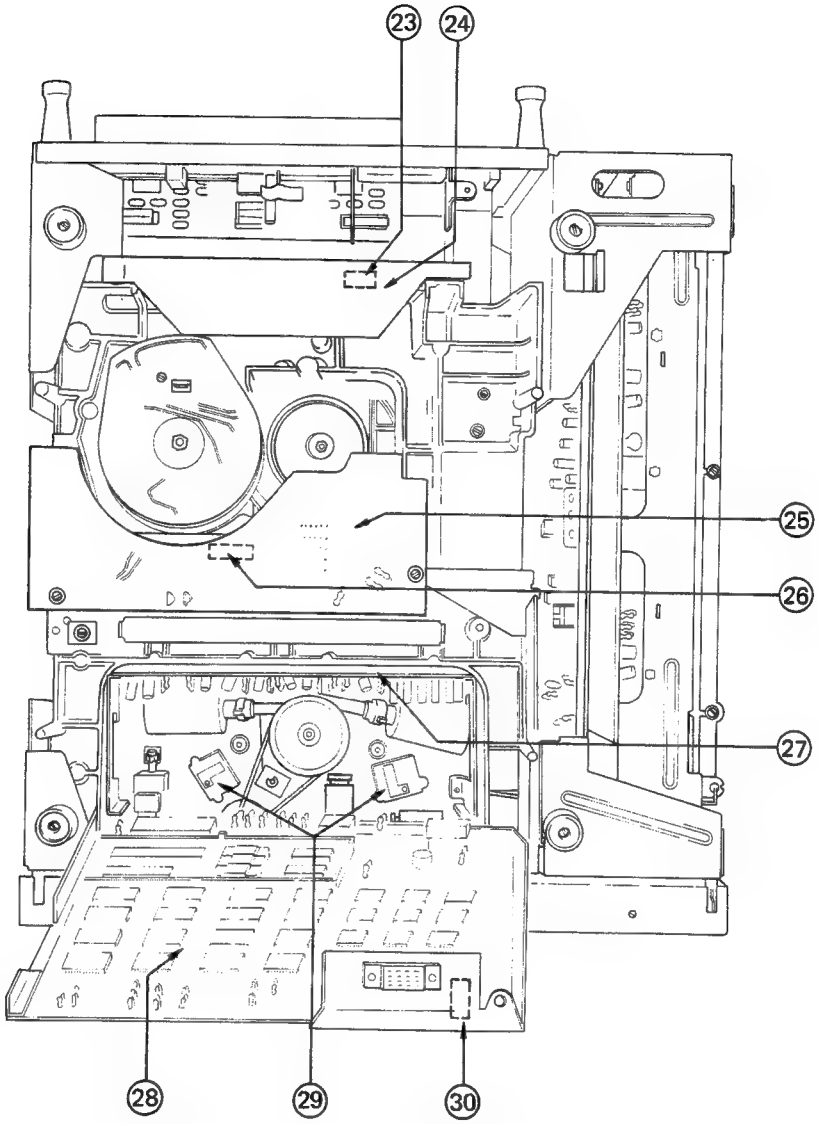
(5) Remove the stay from boss of side panel.

(6) Remove the cassette-up compartment.

Reverse the removal procedure for installing the cassette-up compartment.

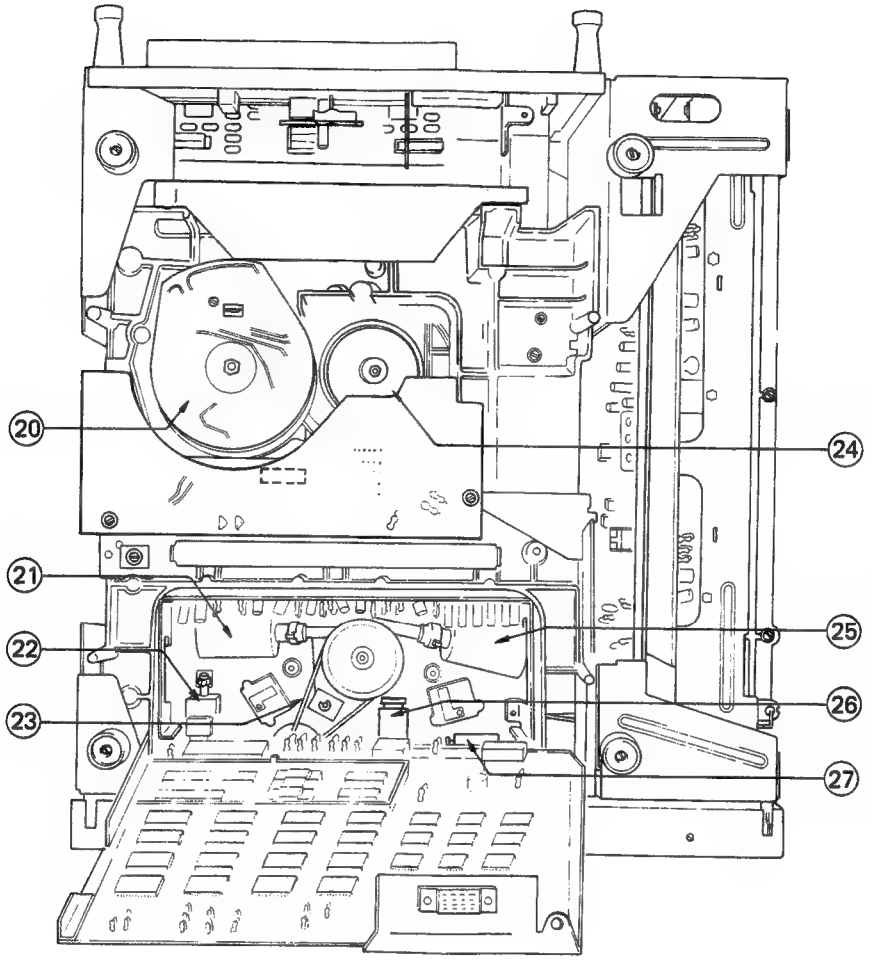


< BOTTOM VIEW >



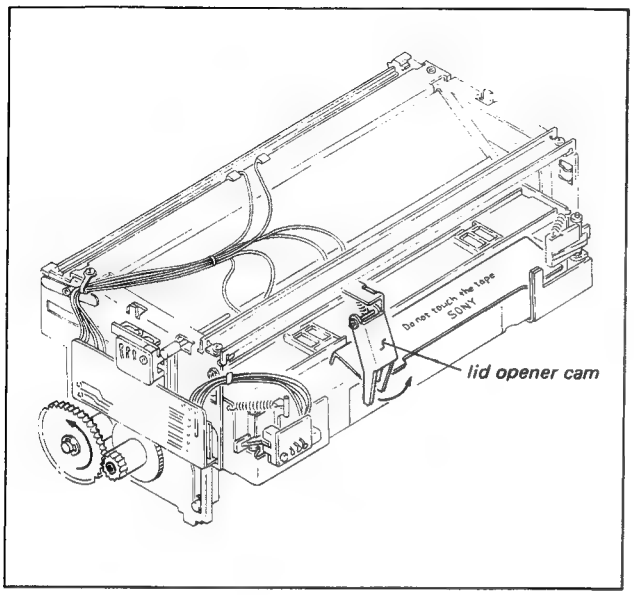
23 PT-9 BOARD
24 DC-10E BOARD
25 MR-6/MR-11 BOARD
26 PT-9 BOARD
27 PD-16 BOARD
28 SY-68C BOARD
29 SW-43 BOARD
30 PT-9 BOARD

< BOTTOM VIEW >



⑳ Capstan motor
㉑ Supply idler solenoid
㉒ Supply brake solenoid
㉓ Belt for FF/REW idler
㉔ Drum motor
㉕ Take-up idler solenoid
㉖ 10 times picture search solenoid
㉗ Take-up brake solenoid

(8) Raise the cam for opening the lid and close the cassette tape lid.



(9) Remove the tape from the cassette compartment.

(10) Turn the gear on the right side of the cassette compartment counterclockwise direction by hand in order to place the cassette compartment into the up state.

(11) Locate the cause of the trouble and remedy the problem.

2-7. TO OPERATE THE MACHINE WITHOUT INSTALLING CASSETTE TAPE

(1) Remove the cassette-up compartment referring to sec. 2-2. (Tape beginning sensor and tape end sensor are disabled according to disconnect the connector of cassette-up compartment.)

(2) Turn off the POWER. (The machine is put into the FR-STOP mode automatically.)

(3) The machine can be placed into the desired mode by pressing the function button to corresponding to the mode.

2-8. TO SET UP 10 TIMES PICTURE SEARCH MODE WITHOUT RM-440

- Search picture at 1/30 to 5 times normal speed can be obtained in both forward and reverse directions by the SEARCH dial on the function control panel. When the KCS cassette is inserted into VTR and the RM-440 is connected to VTR, 10 times picture search is also obtained with the SEARCH dial on the RM-440.

- If RM-440 is not available, 10 times picture search mode is set up as the following procedures.

(1) Unsolder the jumper solder between IC136 pin 4 and IC33 pin 6 on SY-68C board.

(2) Temporarily connect 10 kΩ resistor between IC136 pin 4 and IC33 pin 6 on SY-68C board.

(3) Short between IC33 pin 6 and E8 on SY-68C board with jumper lead.

(4) Unsolder the jumper solder between IC134 pin 3 and IC32 pin 4 on SY-68C board.

(5) Temporarily connect 10 kΩ resistor between IC134 pin 3 and IC32 pin 4 on SY-68C board.

(6) Short between IC32 pin 4 and E8 on SY-68C board with jumper lead.

(7) Short between CN32 pin 11 and E8 on SY-68C board with jumper lead.

(8) FWD direction picture search
Short between CN22 pin 5 and +5 V with jumper lead.
REV direction picture search
Short between CN22 pin 5 and E8 with jumper lead.

After check and/or adjustment is performed, the reset circuit is made to original.

2-9. TAPE SLACK DETECTOR

If the tape is not taken up and tape slack is occurred in the machine, these conditions are detected with the reel rotation detector under the reel table. The reel rotation detector is composed with the slit of the reel table and the photointerrupter. If the reel table is stopped its rotation more than the listed time in FWD, REV and unthreading modes, the reel rotation detector circuit detect as the tape slackes in the machine, and generates the auto stop signal.

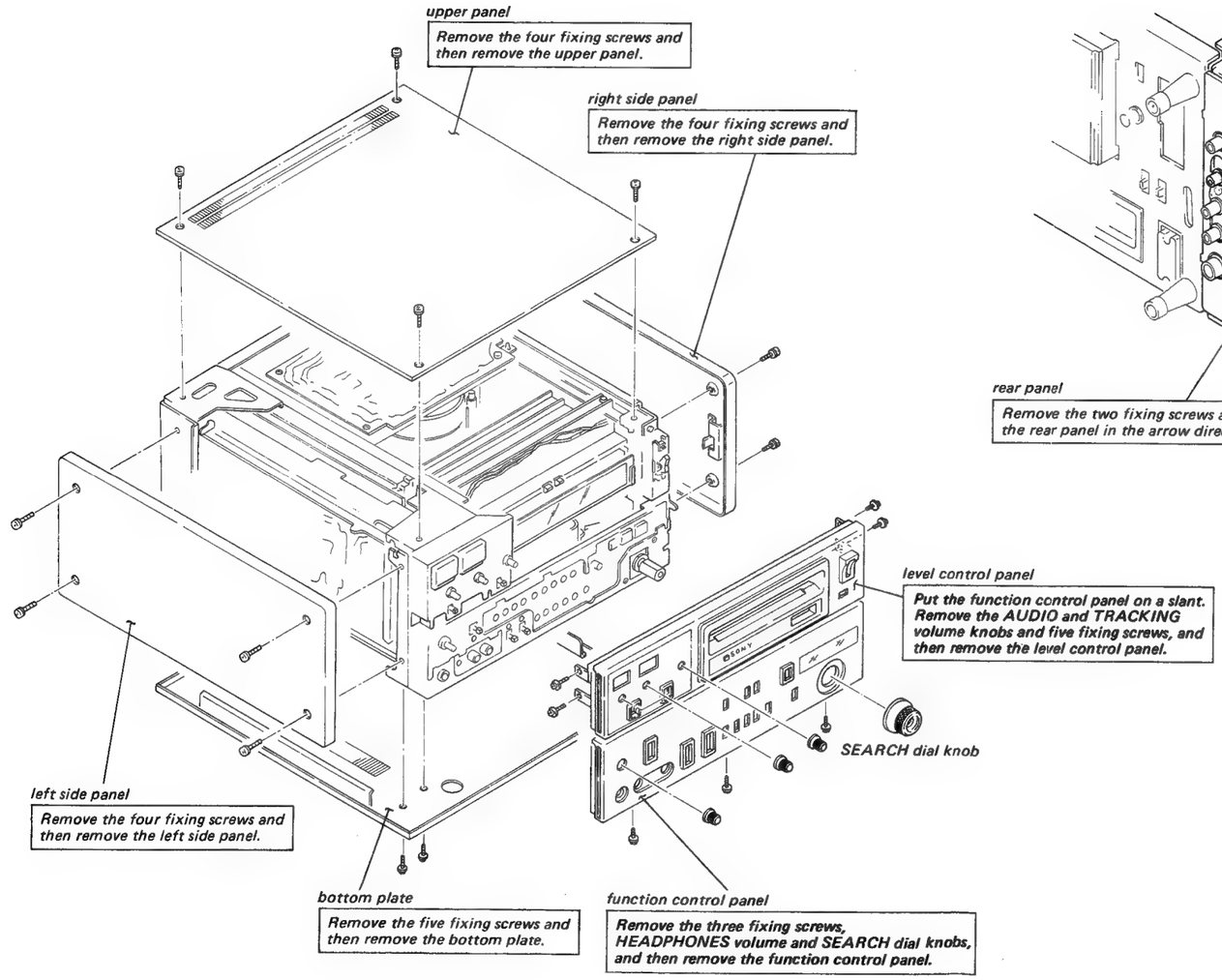
Mode	Time
x1 speed ~	0.3 sec.
x1/10 ~ x1 speed	1.6 sec.
~ 1/10 speed	9.6 sec.

2-10. STOP (E-to-E) MODE

When the cassette tape that the red button is placed on the bottom is inserted into the VTR, the E-to-E picture is obtained on the monitor screen in the FR-STOP mode. The E-to-E picture is also obtained in the EJECT completion (cassette-up) mode.
If you want to set up into the STOP (E-to-E) mode in electrical adjustment, perform the above-mentioned step.
NOTE: Do not use the alignment tape to set up the STOP (E-to-E) mode.

SECTION 2
SERVICE INFORMATION

2-1. DISASSEMBLY OF CABINET



2-2. CASSETTE-UP COMPARTMENT REMOVAL AND INSTALLING PROCEDURES

(1) Remove the upper panel and right side ornamental panel.

(2) Disconnect the connector of cassette-up compartment.

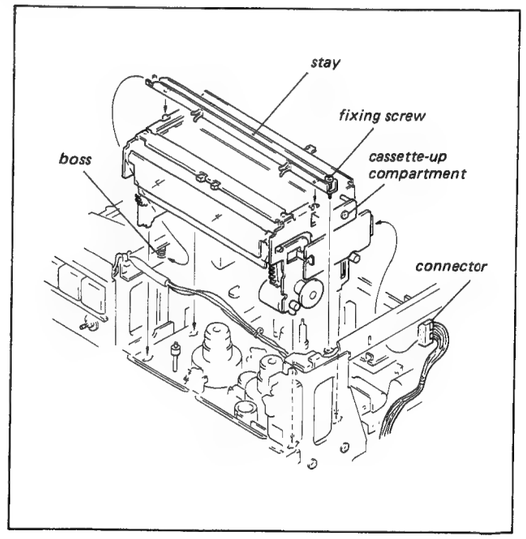
(3) Disconnect the harness from the stay.

(4) Loosen the fixing screw of the right-end of stay.

(5) Remove the stay from boss of side panel.

(6) Remove the cassette-up compartment.

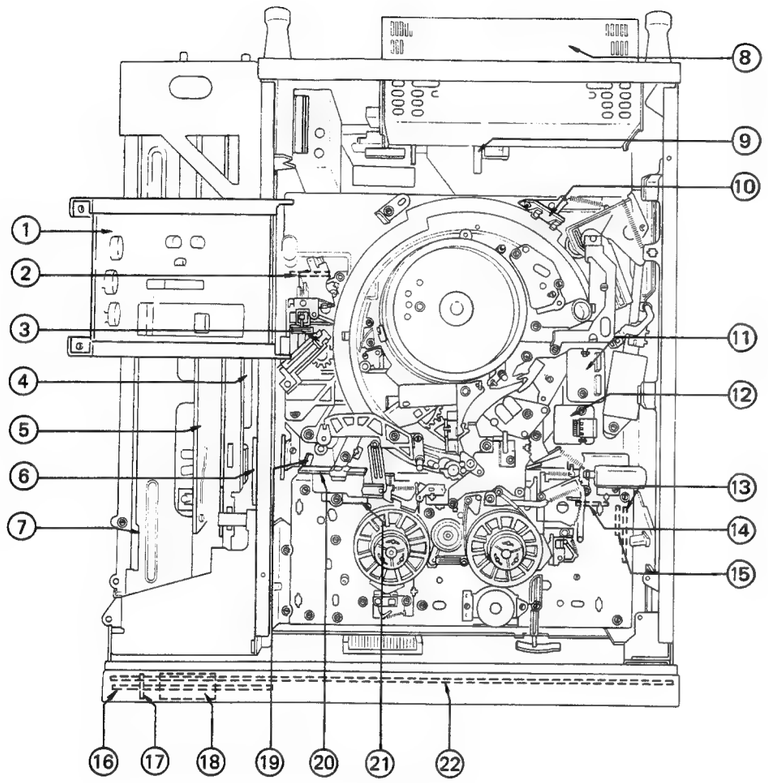
Reverse the removal procedure for installing the cassette-up compartment.



2-3. MAIN PARTS LOCATION

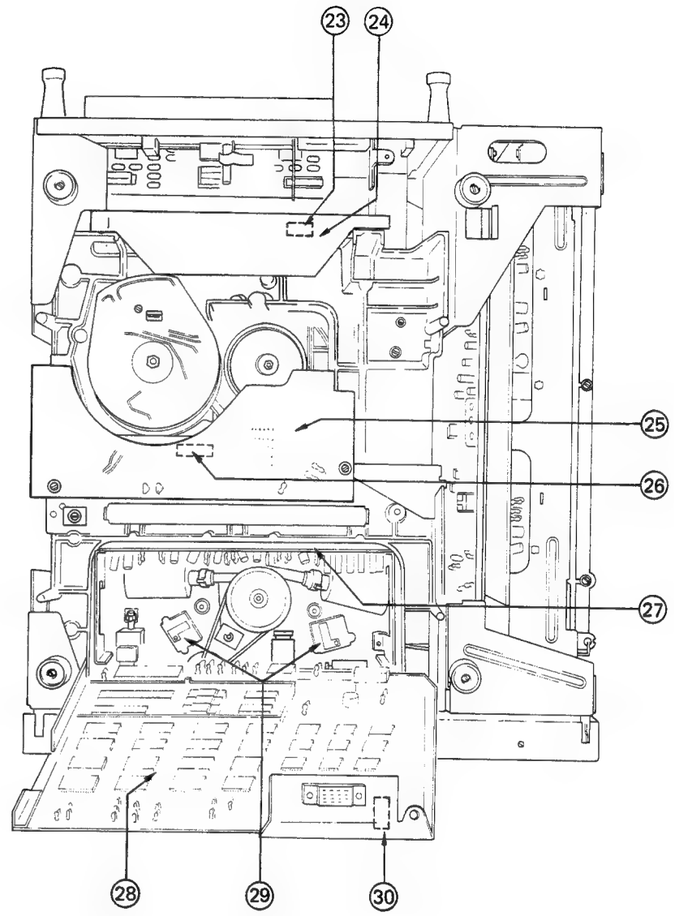
2-3-1. Location of the Printed Circuit Boards

< TOP VIEW >



① RP-8A BOARD
② LM-9 BOARD
③ PH-5 BOARD
④ YC-3 BOARD
⑤ SV-47A BOARD
⑥ ML-1 BOARD
⑦ AU-21A BOARD
⑧ UR-02 (Switching regulator)
⑨ AC-27/AC-36 or AC-35 BOARD
⑩ FR-11 BOARD
⑪ AH-3 BOARD
⑫ EC-19 BOARD
⑬ CC-9 BOARD (Assembled into cassette-up compartment)
⑭ CC-10 BOARD (Assembled into cassette-up compartment)
⑮ CC-11 BOARD (Assembled into cassette-up compartment)
⑯ MC-14 BOARD
⑰ HP-3 BOARD
⑱ MI-3 BOARD
⑲ SW-50 BOARD
⑳ SW-46 BOARD
㉑ PH-4 BOARD
㉒ KY-13B BOARD

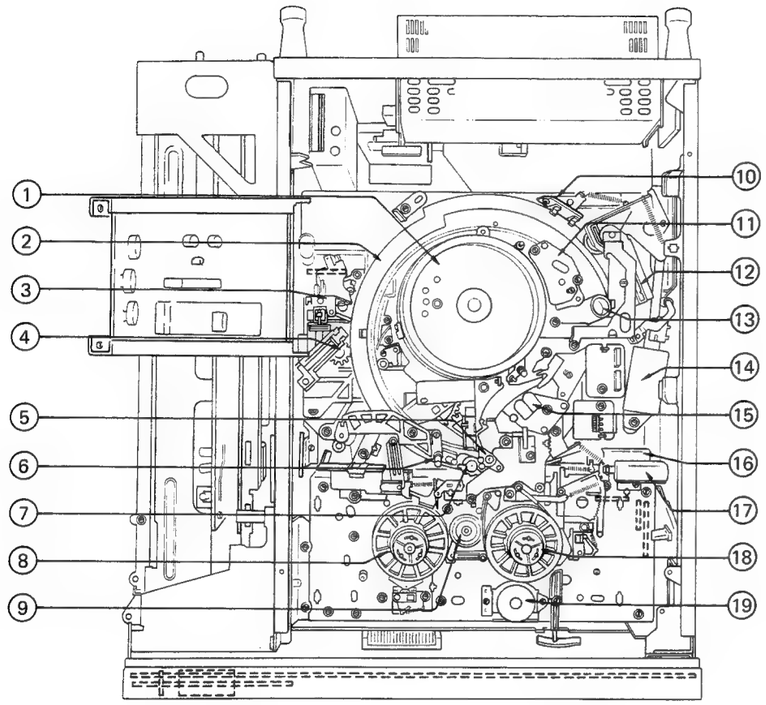
< BOTTOM VIEW >



㉓ PT-9 BOARD
㉔ DC-10E BOARD
㉕ MR-6/MR-11 BOARD
㉖ PT-9 BOARD
㉗ PD-16 BOARD
㉘ SY-68C BOARD
㉙ SW-43 BOARD
㉚ PT-9 BOARD

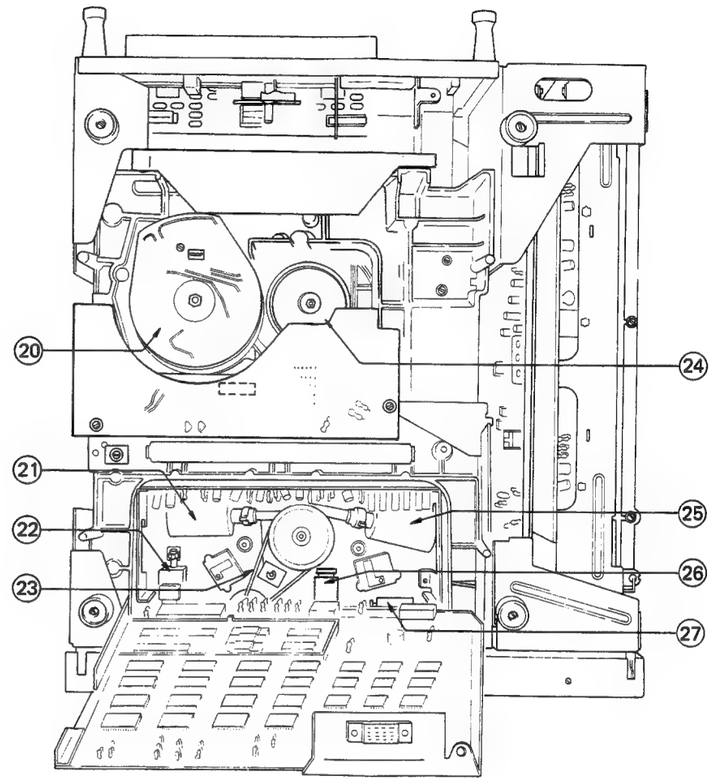
2-3-2. Location of the Mechanical Main Parts/Components

< TOP VIEW >



① Head drum
② Threading ring
③ T correction guide
④ Gear box
⑤ S drawer arm
⑥ T drawer arm
⑦ Pinch roller
⑧ Take-up reel table
⑨ FF/REW idler
⑩ FR detector
⑪ Audio/CTL head
⑫ Pinch lever
⑬ Capstan shaft
⑭ Pinch solenoid
⑮ CTL/Erase head
⑯ Search solenoid
⑰ Skew solenoid
⑱ Supply reel table
⑲ Reel motor

< BOTTOM VIEW >



⑳ Capstan motor
㉑ Supply idler solenoid
㉒ Supply brake solenoid
㉓ Belt for FF/REW idler
㉔ Drum motor
㉕ Take-up idler solenoid
㉖ 10 times picture search solenoid
㉗ Take-up brake solenoid

2-4. SPARE PARTS

1. Safety Related Components Warning.
   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose part numbers appear in this manual or in service bulletins and service manual supplements published by Sony.

2. Replacement Parts supplied from Sony Parts Center will sometimes have a different shape from the original parts. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".
   This manual's exploded views and electrical spare parts list indicate the parts numbers of "the standardized genuine parts at present".
   Regarding engineering parts changes in our engineering department, refer to Sony service bulletins and service manual supplements.

3. Printed Components in Bold-Face type on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

2-5. MACHINE POSITION FOR REPAIR WORK

When the system control circuit repair work is attempted or mechanical maintenance is attempted, place the machine with its left side panel on its top.

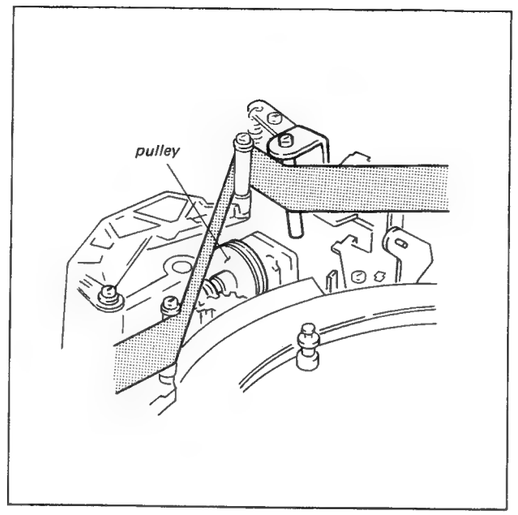
2-6. CASSETTE REMOVAL PROCEDURE WHEN NORMAL EJECTION IS NOT POSSIBLE

If the eject operation becomes impossible due to trouble or the cassette-up compartment does not rise when the eject operation takes place, the cassette tape can be removed from the set by the procedures described below.

(1) Turn off the POWER.

(2) Remove the upper panel and right side ornamental panel.

(3) Turn the white colored pulley of the gear box in the clockwise direction with finger until the threading ring places into the FR-STOP position.
(The threading ring moves in the unthreading direction. But the tape remains at the position of threading completion.)

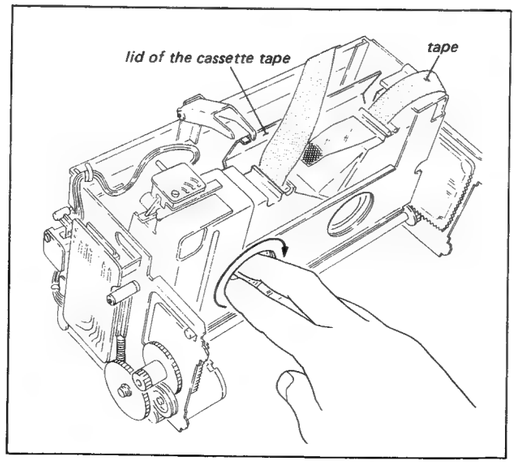


(4) Disconnect the connector of the cassette-up compartment.

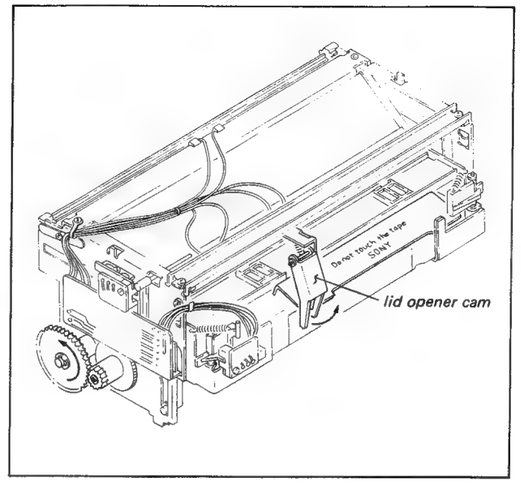
(5) Loosen the right-end fixing screw of the stay, and remove the stay from the boss of the side panel.

(6) Bring up the cassette-up compartment with the cassette tape in it slowly. Remove the tape remaining in the set carefully so that it does not damage.

(7) Hold the cassette tape lid so that it does not close. Wind the tape into the cassette tape by turning the reel hub on the back of the cassette tape with finger.



(8) Raise the cam for opening the lid and close the cassette tape lid.



(9) Remove the tape from the cassette compartment.

(10) Turn the gear on the right side of the cassette compartment counterclockwise direction by hand in order to place the cassette compartment into the up state.

(11) Locate the cause of the trouble and remedy the problem.

2-7. TO OPERATE THE MACHINE WITHOUT INSTALLING CASSETTE TAPE

(1) Remove the cassette-up compartment referring to sec. 2-2. (Tape beginning sensor and tape end sensor are disabled according to disconnect the connector of cassette-up compartment.)

(2) Turn off the POWER. (The machine is put into the FR-STOP mode automatically.)

(3) The machine can be placed into the desired mode by pressing the function button to corresponding to the mode.

2-8. TO SET UP 10 TIMES PICTURE SEARCH MODE WITHOUT RM-440

- Search picture at 1/30 to 5 times normal speed can be obtained in both forward and reverse directions by the SEARCH dial on the function control panel. When the KCS cassette is inserted into VTR and the RM-440 is connected to VTR, 10 times picture search is also obtained with the SEARCH dial on the RM-440.

- If RM-440 is not available, 10 times picture search mode is set up as the following procedures.

(1) Unsolder the jumper solder between IC136 pin 4 and IC33 pin 6 on SY-68C board.

(2) Temporarily connect 10 kΩ resistor between IC136 pin 4 and IC33 pin 6 on SY-68C board.

(3) Short between IC33 pin 6 and E8 on SY-68C board with jumper lead.

(4) Unsolder the jumper solder between IC134 pin 3 and IC32 pin 4 on SY-68C board.

(5) Temporarily connect 10 kΩ resistor between IC134 pin 3 and IC32 pin 4 on SY-68C board.

(6) Short between IC32 pin 4 and E8 on SY-68C board with jumper lead.

(7) Short between CN32 pin 11 and E8 on SY-68C board with jumper lead.

(8) FWD direction picture search
Short between CN22 pin 5 and +5 V with jumper lead.
REV direction picture search
Short between CN22 pin 5 and E8 with jumper lead.

After check and/or adjustment is performed, the reset circuit is made to original.

2-9. TAPE SLACK DETECTOR

If the tape is not taken up and tape slack is occurred in the machine, these conditions are detected with the reel rotation detector under the reel table. The reel rotation detector is composed with the slit of the reel table and the photointerrupter. If the reel table is stopped its rotation more than the listed time in FWD, REV and unthreading modes, the reel rotation detector circuit detect as the tape slackes in the machine, and generates the auto stop signal.

Mode	Time
x1 speed ~	0.3 sec.
x1/10 ~ x1 speed	1.6 sec.
~ 1/10 speed	9.6 sec.

2-10. STOP (E-to-E) MODE

When the cassette tape that the red button is placed on the bottom is inserted into the VTR, the E-to-E picture is obtained on the monitor screen in the FR-STOP mode. The E-to-E picture is also obtained in the EJECT completion (cassette-up) mode.
If you want to set up into the STOP (E-to-E) mode in electrical adjustment, perform the above-mentioned step.
NOTE: Do not use the alignment tape to set up the STOP (E-to-E) mode.

2-11. FIXTURE

Description	Part Number
Drum Eccentricity Gauge (3)	J-6001-820-A
Drum Eccentricity Gauge (2)	J-6001-830-A
Drum Eccentricity Gauge (1)	J-6001-840-A
Drum Eccentricity Gauge (4)	J-6001-930-A
Dihedral Adjusting Screw	J-6080-013-A
Flatness Plate	J-6009-830-A
Reel Table Height Check Base Jig	J-6130-010-A
Reel Table Height Check Jig	J-6130-020-A
Pinch Lever Adjustment Jig	J-6150-020-A
Cleaning Fluid	Y-2031-001-0
Cleaning Piece	2-034-697-00
Torque Measurement Tape (100 mm dia.)	3-702-215-01
Back Tension Adjustment Jig	3-702-216-01
Sony Oil	7-661-018-01
Tension Scale (50 g full scale)	7-732-050-20
Tension Scale (100 g full scale)	7-732-050-30
Tension Scale (200 g full scale)	7-732-050-40
Tension Scale (500 g full scale)	7-732-050-50
Alignment Tape, RR5-2SC-PAL	8-960-035-61
Thickness Gauge	9-911-053-00
Head Demagnetizer, HE-4	Standard products.

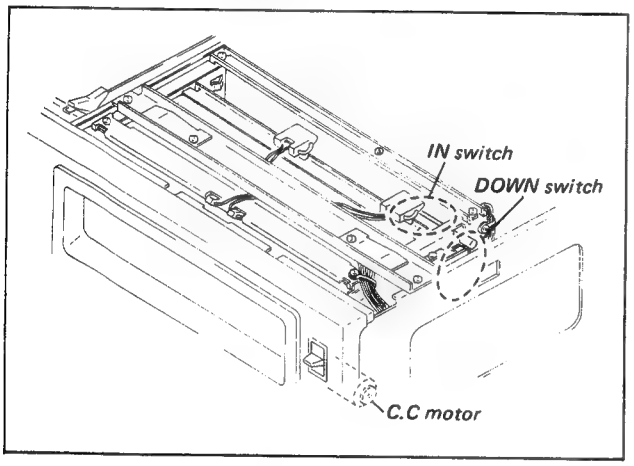
2-12. PRINTED CIRCUIT BOARD

The circuit board information is provided below.

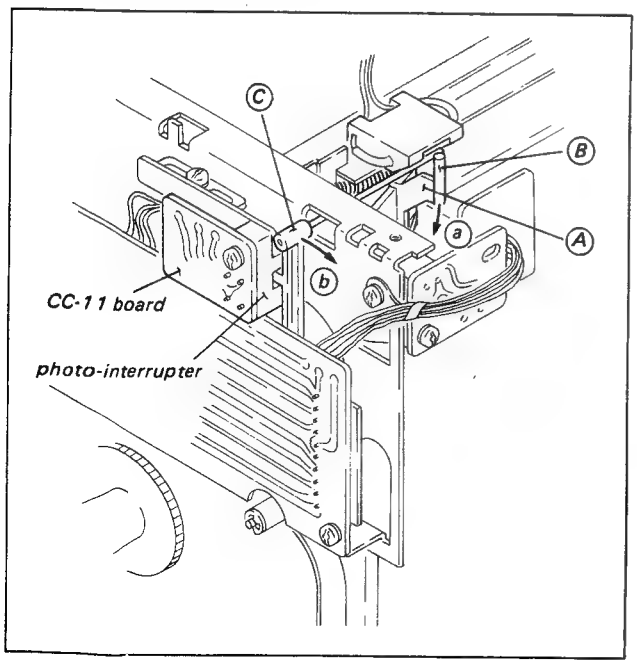
SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	YC-3	• Luminance and Chrominance Signal Modulator/Demodulator • Color Framing
VIDEO	RP-8A	• Record/Playback Amplifier
AUDIO	AU-21A	• Audio REC/PB Amplifier • Bias/Erase Oscillator
	MI-3	• CH-1/CH-2 Mic Input
	HP-3	• Headphones Level Control/Headphones Jack
	EC-19	• Full Erase/CTL PB Head
	AH-3	• Audio REC/PB/Erase and CTL REC/PB Head
	MC-14	• Audio/Meter and Level Control
SERVO	SV-47A	• Drum/Capstan Speed and Phase PWM Servo • CTL REC/PB Amplifier
	MR-6 MR-11	• Threading/Cassette Compartment Motor Driver • Skew/Search/Pinch Solenoid Driver • Reel Motor Control and Driver
	PT-9 (A)	• Drum Motor Power Driver
	DC-10E	• Drum/Capstan Motor Driver • DME Shaper
	PT-9 (B)	• Reel Motor Power Driver
POWER SUPPLY	AC-35 AC-27 AC-36	• AC Input
	UR-02	• Swithcing Regulator
	DC-10E	• Power Supply
SYSTEM CONTROL	FR-11	• Threading Ring Mechanical Position Detector
	PH-4 PH-5	• Tape Tension Detector • Tape Beginning Sensor • Tape End Sensor
	KY-13B	• Function Key Board • Display Driver • Mode/Input/Monitor Select
	DP-10	• Display
	PD-16	• Take up Idler/Brake and Supply Idler/Brake REW FF Search Solenoid Driver
	SW-43	• Take up Reel Rotation Detector • Supply Reel Rotation Detector
	ML-1	• Hours Meter
	LM-7	• Threading Motor
	SW-46	• Miss REC Detector • KCA/KCS Detector
	SW-50	• Unthread End Detector
	CC-9	• Cassette Compartment Motor/PL
	CC-10	• Cassette in Detector
	CC-11	• Cassette Down Detector
	SY-68C	• System Control Micro Processor
	PT-9 (C)	• Regulator for System Control

2-13. CASSETTE-UP COMPARTMENT OPERATION

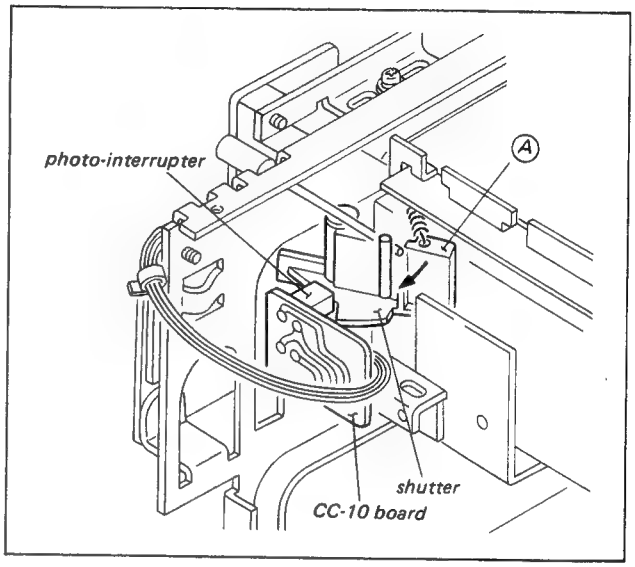
The cassette insertion system in the VO-5800PS is a front access system. The cassette compartment drops automatically after the cassette tape has been inserted into the cassette compartment and threading action is started after the cassette is seated in the home position.
The timing of the electronic switches and motor are referring sec. 2-15.
The cassette down switch, cassette in switch and cassette compartment motor operates as follows:



(1) Cassette Down Switch
The cassette tape is inserted by hand and then the cassette pushing lever (called Ⓐ for making the sentence simple) moves in the direction indicated by arrow ⓐ.
The down switch arm (called ⓒ) which has been held by the pin (called Ⓑ) of the Ⓐ moves in the direction shown by arrow ⓑ with the movement of Ⓐ, and the shutter of ⓒ opens the photo-interrupter on the CC-11 board.
Then the DOWN switch turns to "L".

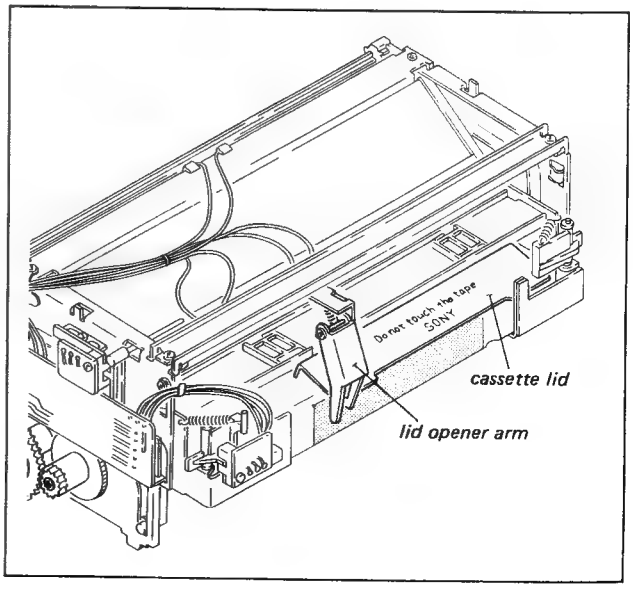


(2) Cassette In Switch
The cassette tape is inserted by hand further after the DOWN switch operates (until the cassette is stopped).
The Ⓐ shutter covers the photo-interrupter on the CC-10 board and the IN switch turns to "H".



(3) Cassette Compartment Motor (C.C. Motor)
When the IN switch turns to "H" after the cassette insertion, about 11.3 V is impressed on the C.C. motor via the CC-9 board and the motor starts. The power of the motor moves the cassette compartment through the belt and the gears.

(4) Cassette Tape Lid Opener
When the cassette tape is inserted, the C.C. motor rotates, and the cassette compartment moves.
The lid opener arm holds the bottom section of the cassette lid at the point where the horizontal movement of the cassette compartment changes to the vertical movement. The lid is opened following with the downward movement of the cassette compartment.



2-14. TAPE TENSION CONTROL MECHANISM

The tape tension control mechanism of VO-5800PS is composed with the mechanical and electrical tape tension control mechanisms.

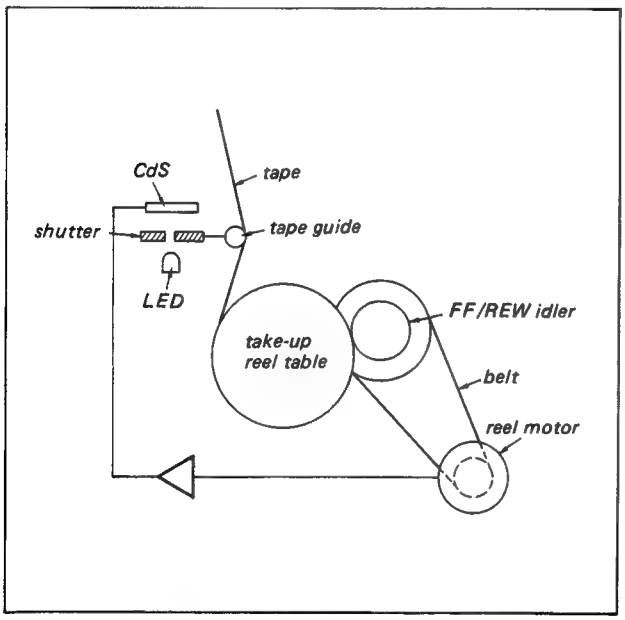
(1) The tape tension control mechanism in normal playback, record, FWD search and unthreading modes (when the take-up reel table rotates in the counterclockwise direction (except FF mode)) is as follows:

(i) Tape feeding side (supply reel table side)
The tape back tension control mechanism of the tape feeding side is the same as the conventional VTR. This back tension control mechanism is the mechanical tape tension control mechanism.

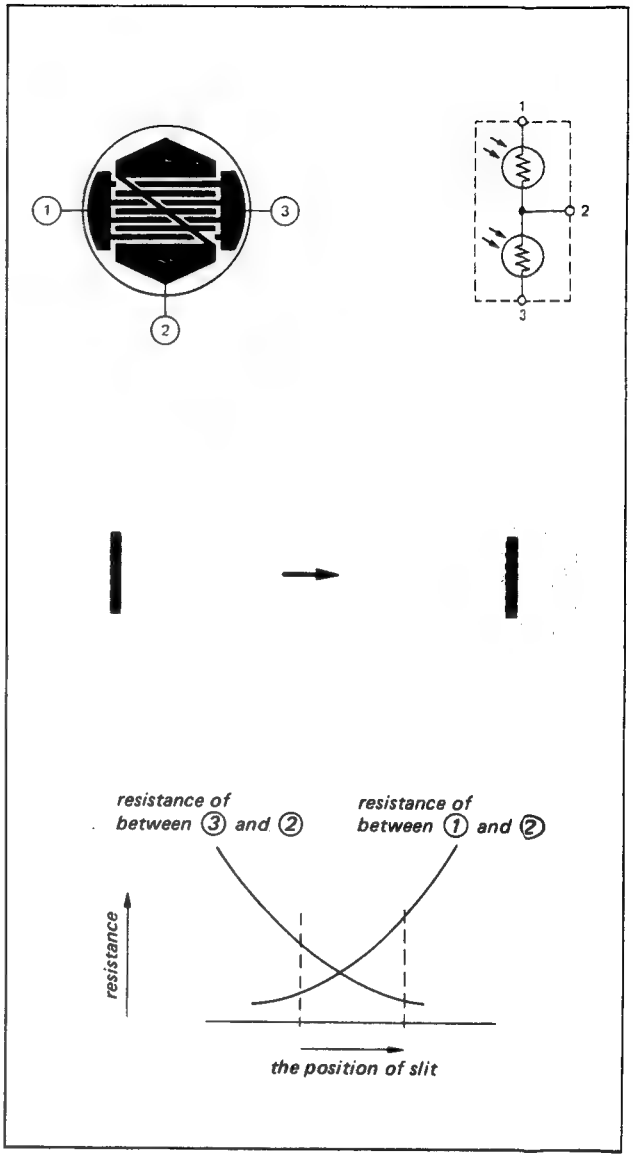
Tension Arm → Brake Band → Supply Reel Table
(Tape Tension) ← Skew Control

(ii) Tape taking-up side (take-up reel table side)
The tape tension of the take-up side is controlled with the electrical tape tension control mechanism. The R brake shoe is released from the take-up reel table in this mode. The electrical tape tension control mechanism is composed with the following blockes.

Tension Arm → Shutter → LED → CdS → Reel Motor Torque is controlled with this output
(Tape Tension)



The light emitted by an LED is received by the CdS detector element through a slit on the shutter connected with the tape guide. The electrodes' pattern of this CdS is shown in figure.
The slit moves with the tape tension change and the point where the light reflector moves. Then the resistance values between ① ~ ② and the resistance between ③ ~ ② are vary. The tape tension around the tension detector tape guide is detected by the resistance variation. This resistance variation output controls the reel motor torque and the tape tension is controlled.

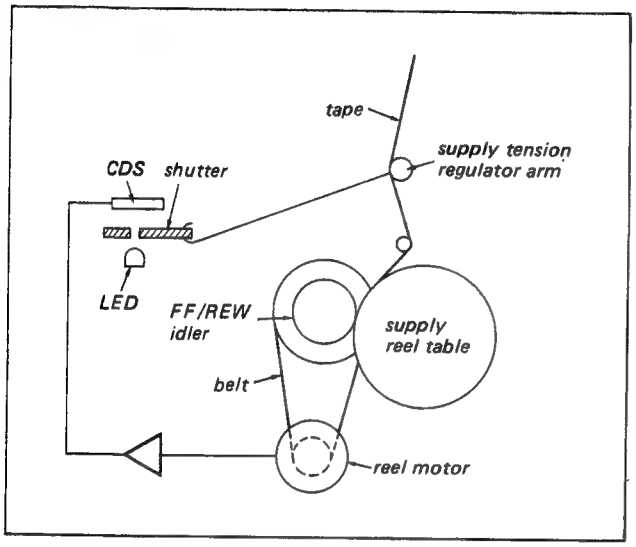


(2) The tape tension control mechanism in REV search mode (when the supply reel table rotates in the counterclockwise direction (except REW mode)) is as follows:

(i) Tape feeding side (take-up reel table side)
The tape is supplied from the take-up reel table in this mode. The tape tension control mechanism is the same as the supply side tape tension control mechanism as mentioned former.

Tension Arm → R Brake Shoe → Take-up Reel Table
(Tape Tension)

(ii) Tape taking-up side (supply reel table side)
The tape tension of the take-up side (supply reel table side) is controlled with the electrical tape tension control mechanism.

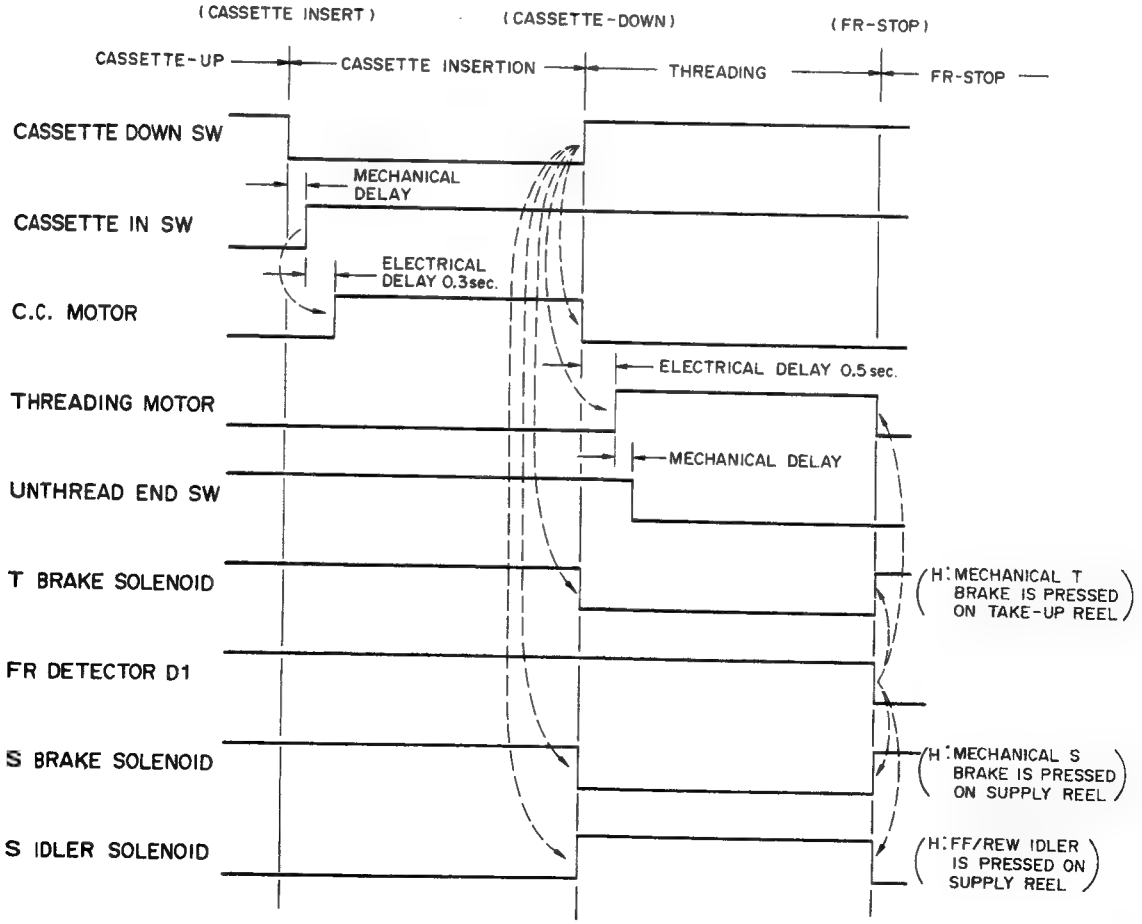


2-15. TIMING OF SWITCH, MOTOR AND SOLENOID

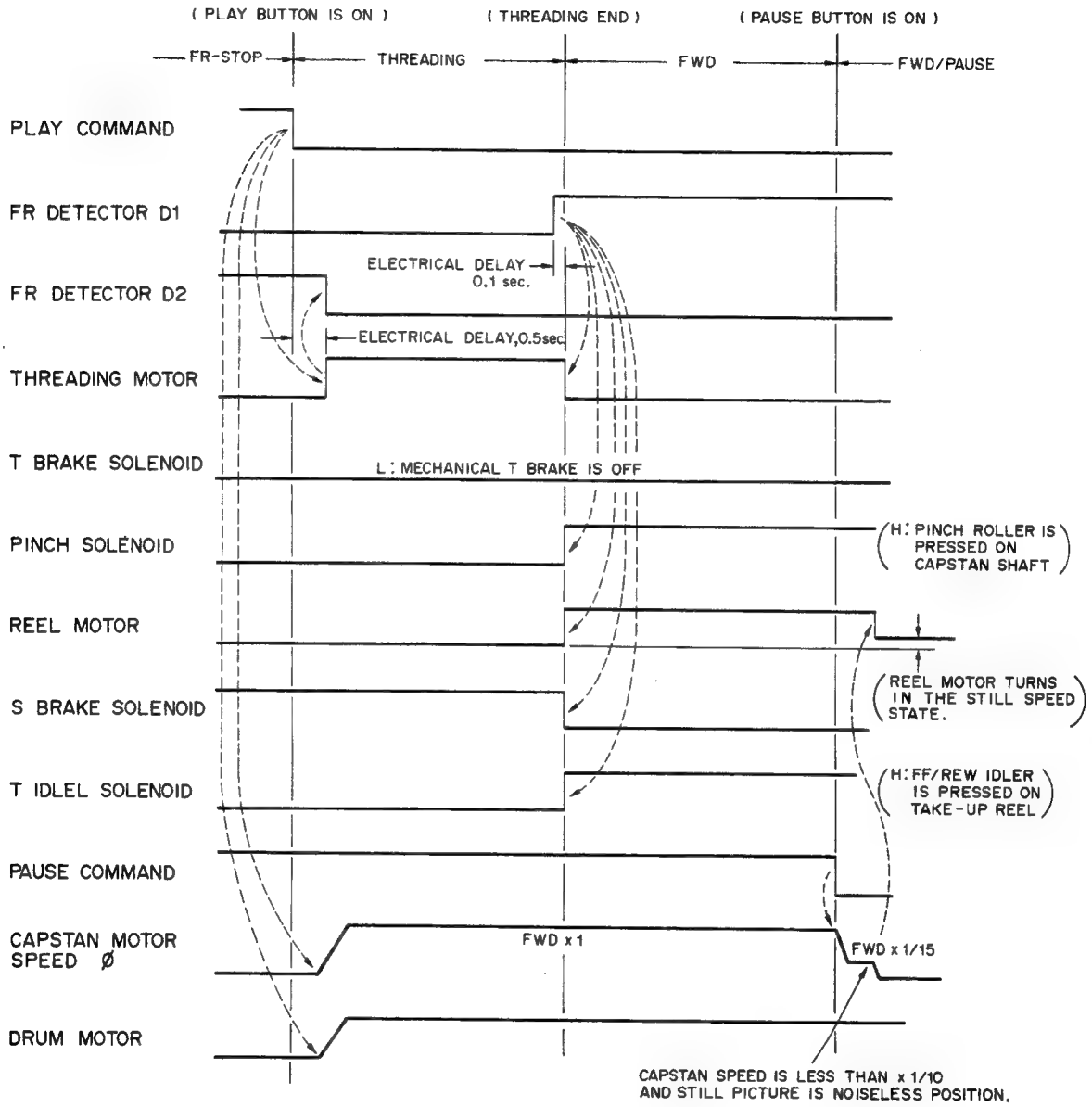
- The timing of the electronic switches, motors and solenoids in the following modes are follows.

Cassette in → FR-STOP
FR-STOP → FWD → FWD/PAUSE
FR-STOP → REC → REC/PAUSE
FWD → FWD SEARCH → REV SEARCH
FWD → FR-STOP
FR-STOP → FF → FR-STOP
FR-STOP → EJECT Completion

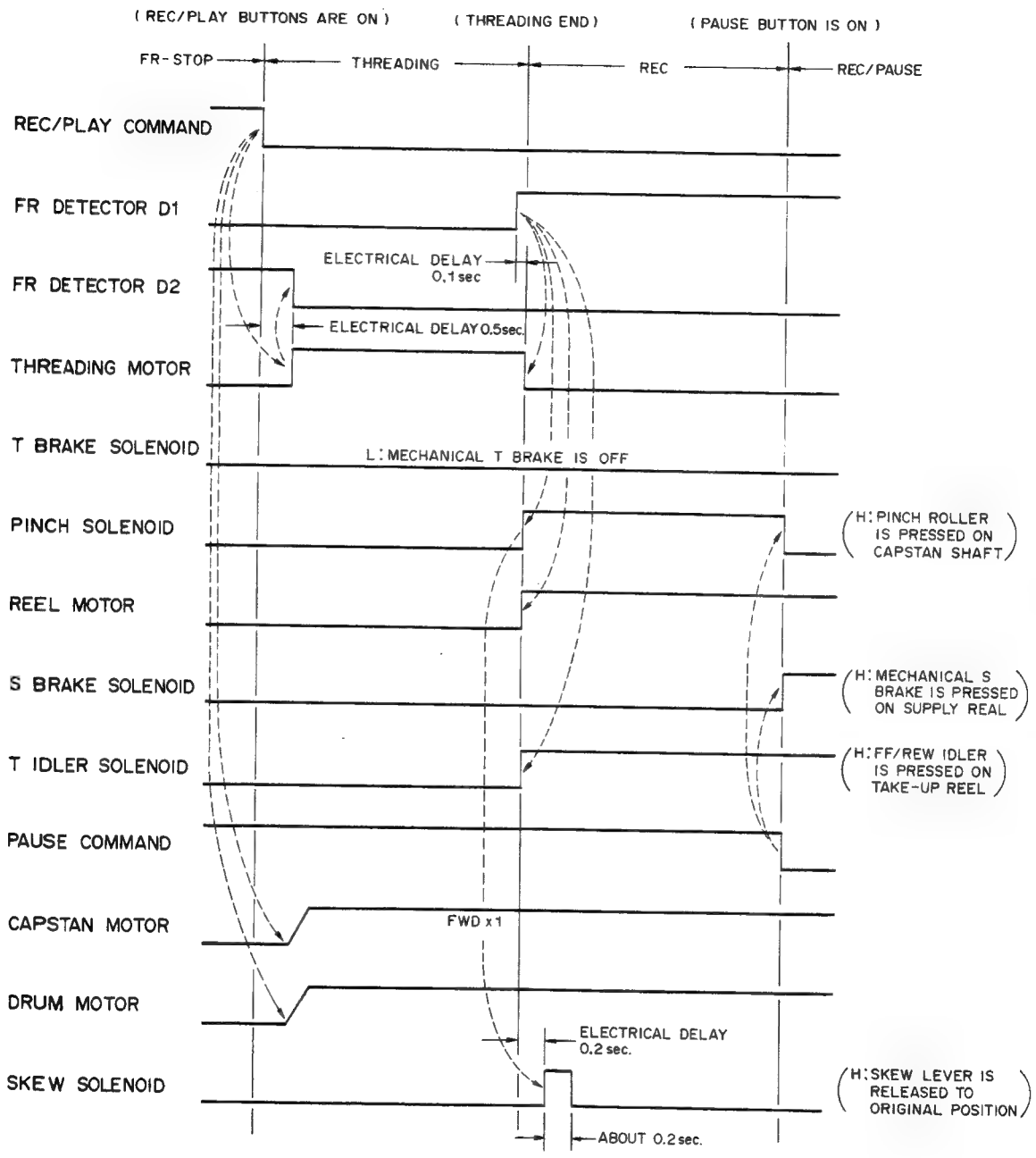
- CASSETTE-IN→FR-STOP



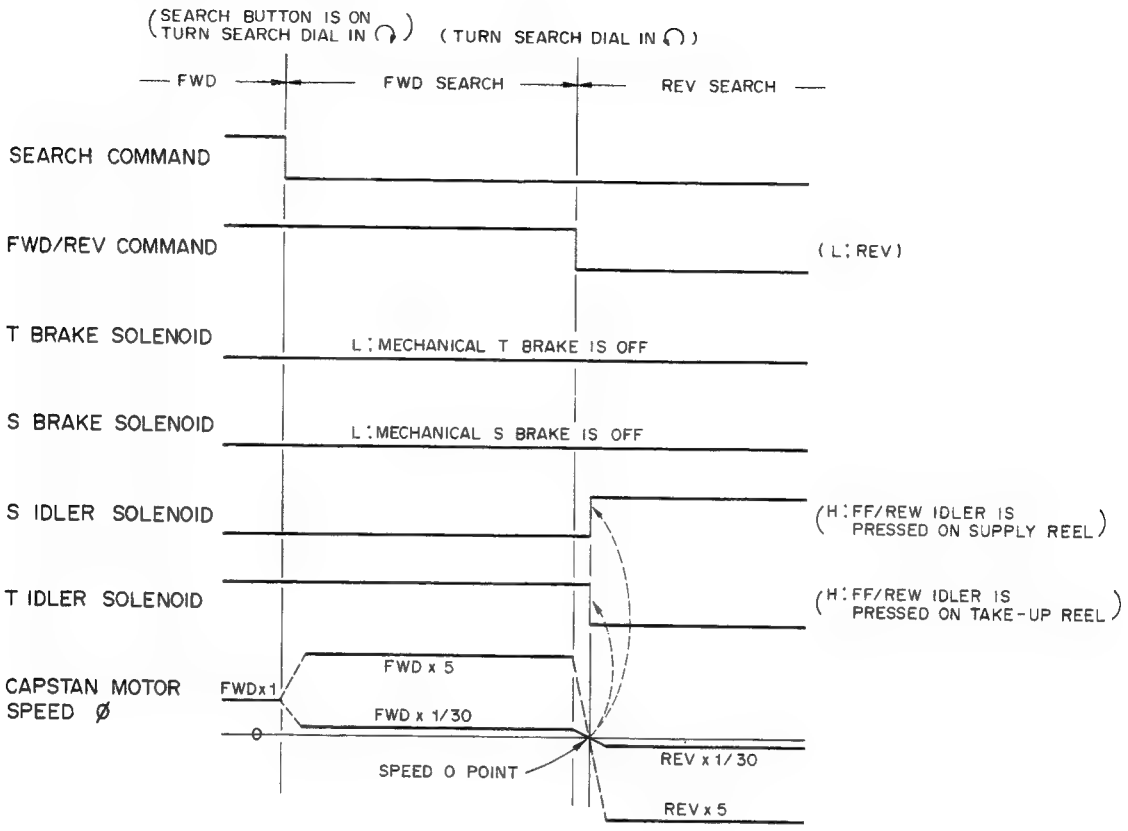
• FR – STOP → FWD → FWD/PAUSE



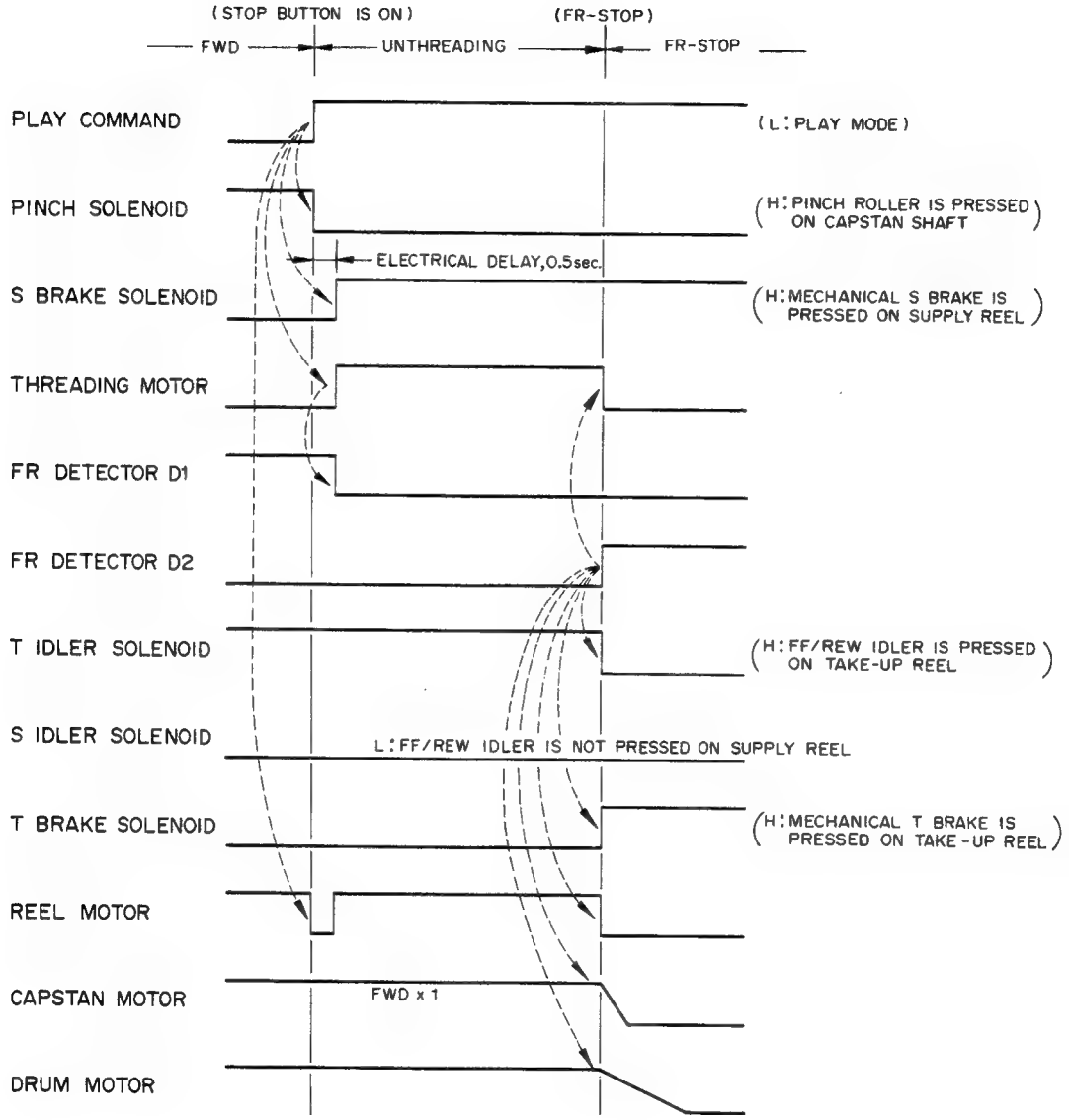
• FR-STOP→REC→REC/PAUSE



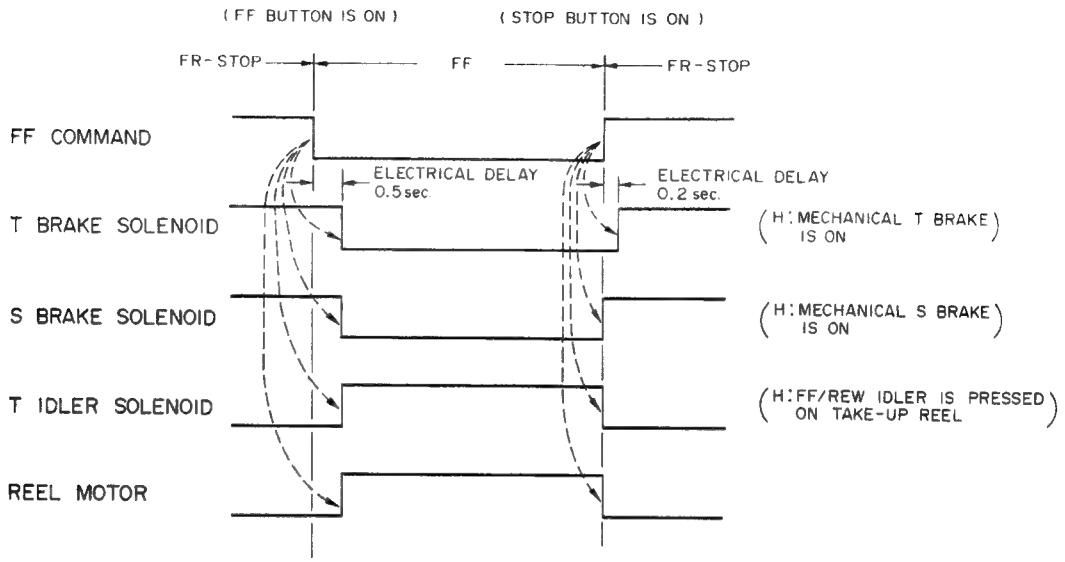
• FWD → FWD SEARCH → REV SEARCH



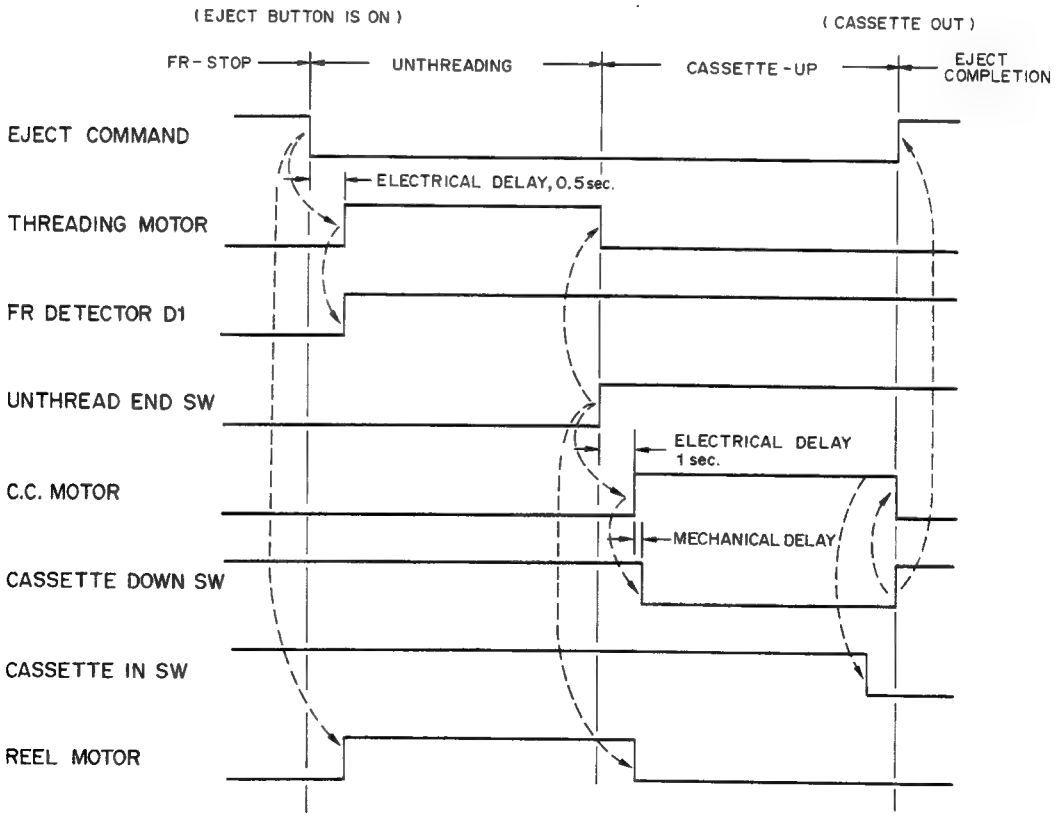
• FWD → FR-STOP


(STOP BUTTON IS ON)
(FR-STOP)
FWD
UNTHREADING
FR-STOP
PLAY COMMAND
(L:PLAY MODE)
PINCH SOLENOID
(H:PINCH ROLLER IS PRESSED ON CAPSTAN SHAFT)
ELECTRICAL DELAY,0.5sec.
S BRAKE SOLENOID
(H:MECHANICAL S BRAKE IS PRESSED ON SUPPLY REEL)
THREADING MOTOR
FR DETECTOR D1
FR DETECTOR D2
T IDLER SOLENOID
(H:FF/REW IDLER IS PRESSED ON TAKE-UP REEL)
S IDLER SOLENOID
L:FF/REW IDLER IS NOT PRESSED ON SUPPLY REEL
T BRAKE SOLENOID
(H:MECHANICAL T BRAKE IS PRESSED ON TAKE-UP REEL)
REEL MOTOR
CAPSTAN MOTOR
FWD x 1
DRUM MOTOR

• FR-STOP → FF → FR-STOP



• FR-STOP → EJECT COMPLETION



SECTION 3
PERIODIC CHECK AND MAINTENANCE

It is recommended to perform the maintenance and the periodic check mentioned below for the best operation of the function and performance of the machine and for prolonging the lives of the machine and the tape.

3-1. MAINTENANCE AFTER REPAIRS

Perform the following maintenance after the repair without regarding the operating hours of the machine.

(1) Cleaning of video heads and rotary erase heads

- Press the cleaning piece moistured with the cleaning fluid and turn the drum slowly with the hand, cleaning the heads. (Never turn the motor by the electric power for the cleaning.)
- Never move the cleaning piece in the vertical direction of the head tip in the cleaning. It tends to damage the head tips.

(2) Cleaning of tape running system

- Wipe the tape bearing surfaces (of the tape guide, drum, capstan, and pinch roller) with cleaning piece saturated with the cleaning fluid.

(3) Cleaning of drive system

- Wipe the drive system (such as belt, idler, and reel table surface) with cleaning piece saturated with the cleaning fluid.

3-2. PERIODIC CHECK

Perform the maintenance checks described separately in accordance with the operational hours of the machine.

3-3. HOURS METER

The VO-5800PS has an hours meter on the ML-1 board for the periodic check and the maintenance. The hours meter accumulates and records the elapsed time of all the modes in which the drum rotates while the tape is threaded. It is recommended that the hours meter is used as a tool for determining the periodic check. When the hours meter indicates the maximum value, 1000 hours, the hours meter must be replaced with a new one.
(SONY Part No.: 1-548-119-00)

3-4. OTHERS

(1) SONY oil

- Be sure to use the SONY oil as the lubrication oil. (If oil other than the SONY oil is used, various troubles due to a different viscosity tends to be caused.)

SONY oil: Part No. 7-661-018-01

- Use the SONY oil in which dust or other foreign material have not mixed for lubricating the bearing. (If foreign material is in the oil, wear or burning of the bearing tends to be caused.)

(2) Grease

Be sure to use the following grease.
SONY grease: Part No. 7-662-001-62 (SGL-501)

(3) Regarding overhaul of equipment

When overhaul of an equipment is attempted, replace parts referring list. For the parts not listed in the list, such as motors and heads, refer the following items.

Reel motor;	about 3,000H
Capstan motor;	about H
Threading motor;	about H
Cassette-up compartment motor;	about H
Audio/CTL head;	about 3,000H
CTL/Erase head;	about H

■ : apply oil ○ : cleaning ◆ : replace ◇ : check ◎ : apply a grease

Item \ Operating Hours (H)	Part No. of Replacement Parts	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape path cleaning	———	○	○	○	○	○	○	○	○	○	○	Perform whenever repair work is attempted
Video heads cleaning and replace	A-6709-400-A	○	◆	○	◆	○	◆	○	◆	○	◆	Life of the video heads are affected extensively by operating ambient conditions
Replacement of pinch roller	A-6750-125-D	○	◆	○	◆	○	◆	○	◆	○	◆	Life of the pinch roller are affected extensively by operating systems
Replacement of FF/REW idler belt	3-668-785-00	○	○	○	◆	○	○	○	◆	○	○	
Replacement of reel table	A-6739-017-B	○	■	○	◆	○	■	○	◆	○	■	
Replacement of R brake shoe	X-3668-737-0	–	–	–	◆	–	–	–	◆	–	–	
Replacement of brake band	X-3668-707-0	–	–	–	◆	–	–	–	◆	–	–	
Replacement of belt on gear box	3-668-946-00	○	○	○	○	○	○	○	◆	○	○	
Replacement of belt on cassette-up compartment	3-653-387-00	○	○	○	○	○	○	○	◆	○	○	
Cleaning the shaft of the threading roller on the threading ring	———	–	○	–	○	–	○	–	○	–	○	Clean with a cloth dampened with a cleaning fluid
Apply a grease on the ring rollers	———	–	◎	–	◎	–	◎	–	◎	–	◎	Apply a grease on the surface of the ring roller
Check the FWD back tension	———	–	◇	–	◇	–	◇	–	◇	–	◇	Refer to sec. 6-6
Check the FWD torque	———	–	◇	–	◇	–	◇	–	◇	–	◇	Refer to sec. 6-3
Check the REV torque	———	–	◇	–	◇	–	◇	–	◇	–	◇	Refer to sec. 6-4
Check the brake torque	———	–	–	–	◇	–	–	–	◇	–	–	Refer to sec. 6-1

SECTION 4
REPLACEMENT OF MAJOR PARTS

4-1. REPLACEMENT OF UPPER DRUM ASSEMBLY

- The rotary video heads cannot be replaced individually; the whole upper drum assembly must be replaced when any one of these heads fails.

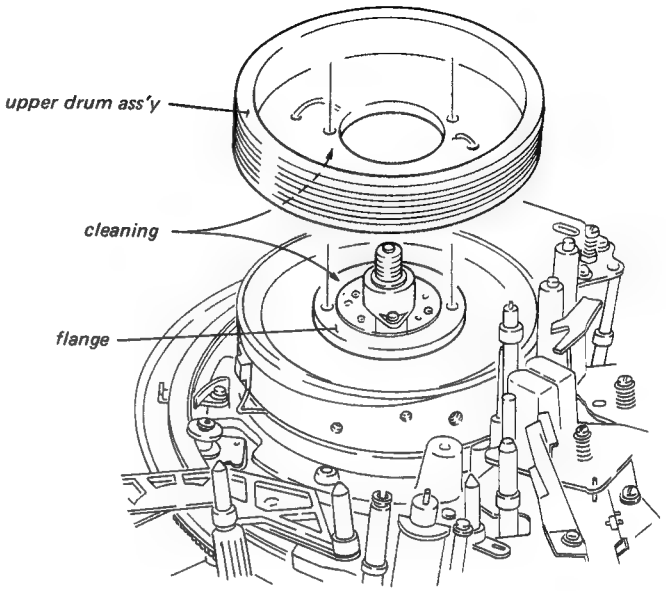
Tool: Drum eccentricity gauge (1)
Drum eccentricity gauge (2)
Drum eccentricity gauge (3)
Drum eccentricity gauge (4)
Cleaning fluid

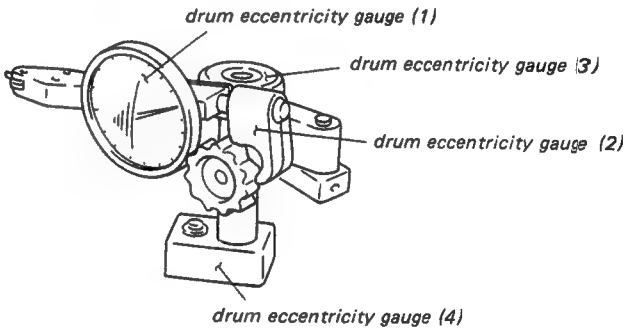
Replacement procedure:

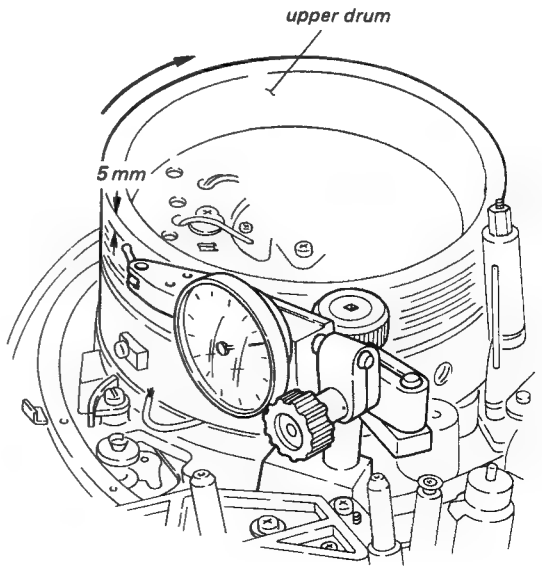
(1) Unsolder the four leads of the video head from the printed circuit board and remove the upper drum assembly from the head drum assembly.
(2) Clean the matching surfaces of the flange and new upper drum assembly with a cloth moistened with cleaning fluid. (If there is a spacer between drum and flange, it should be remain in place, or be re-installed in the same place with the new upper drum assembly.)
(3) Place the upper drum assembly so that the head of the white leads is close to the round indentation on the surface of the flange. (The rounded indentation can be seen through the hole in the end of the printed circuit board the white leads are connected to). Thread the two screws snugly but do not tighten.

Adjustment procedure:

(1) Remove the S guard block (Because the S guard's bottom connector is inserted into the connector on the chassis, it need the power to remove.)
(2) Assemble the drum eccentricity gauges (1), (2), (3) and (4) as shown in figure. Mount the assembled gauges on the machine so that the tip probe positiones at the point about 5 mm apart from the top edge of the upper drum.
(3) Turn the upper drum slowly clockwise and confirm the pointer deflection of the gauge is within 5μ during one complete turn of the upper drum. If this specification is satisfied, proceed with step (5). If it is not, perform step (4).
(4) Tap the inside of the upper drum with a nylon hammer or a screwdriver handle and like so that the gauge deflection remains within 5μ.
(5) After the adjustment, tighten the two screws that are securing the upper drum, alternately and gradually using a tightening torque: 14 ~ 16 kg.cm.





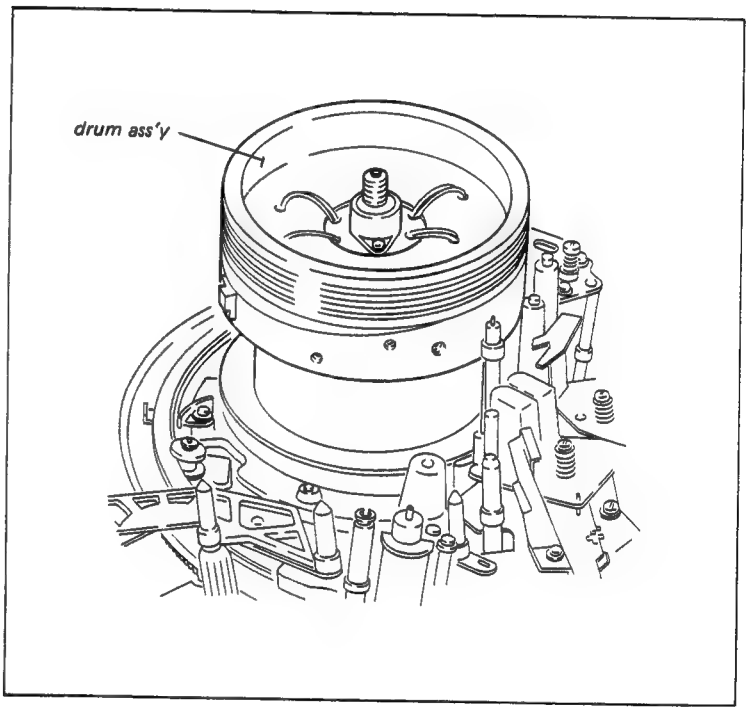


(6) After the screws are tightened, check again that the eccentricity of the upper drum is within 5μ.
(7) Solder the four leads from the video heads to the printed circuit board.
(8) Install the S guard block.
(9) Perform the various adjustments as shown in page 4-6.

4-2. REPLACEMENT OF DRUM ASSEMBLY

Replacement procedure:

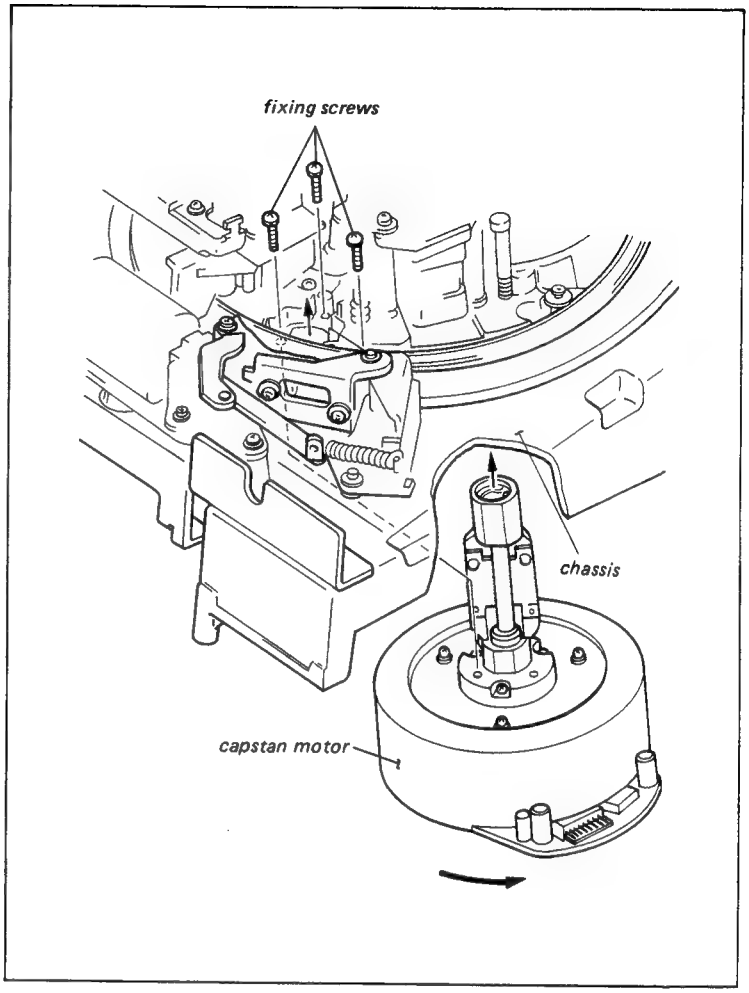
(1) Disconnect the connectors (CN1 and CN2) of the drum assembly and CN2 on the RP-8A board.
(2) Remove the three fixing screws on the back of the chassis and remove the defective drum.
(3) Install the drum on the base while turning the drum assembly in the clockwise direction as seen from top of the set.
(4) Connect the three connectors.
(5) Perform the various adjustments as shown in page 4-6.



4-3. REPLACEMENT OF CAPSTAN MOTOR

Replacement procedure:

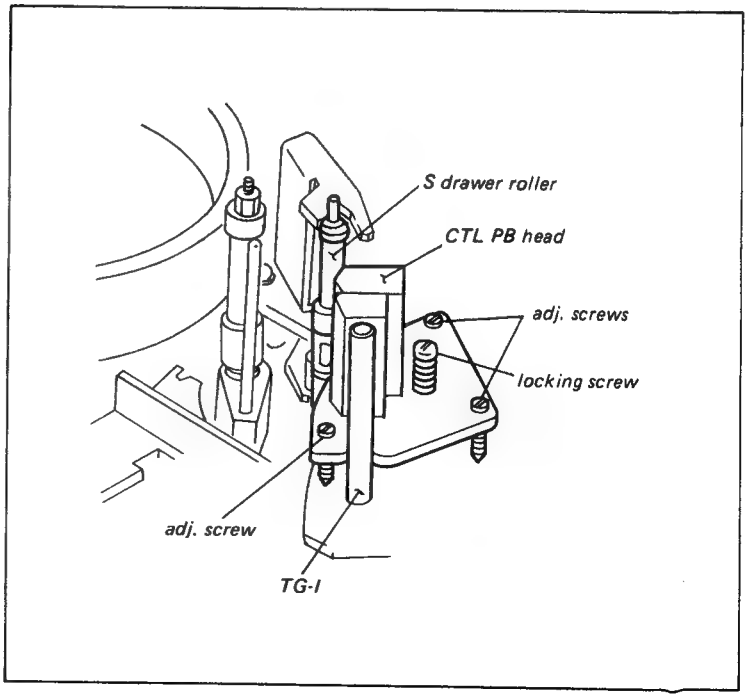
(1) Remove the capstan motor.
(2) Install the new capstan motor and thread three fixing screws snugly but do not tighten.
(3) While turning the capstan motor in the counterclockwise direction as seen from top of the set and tighten the fixing screws.



4-4. REPLACEMENT OF CTL PB HEAD

Replacement procedure:

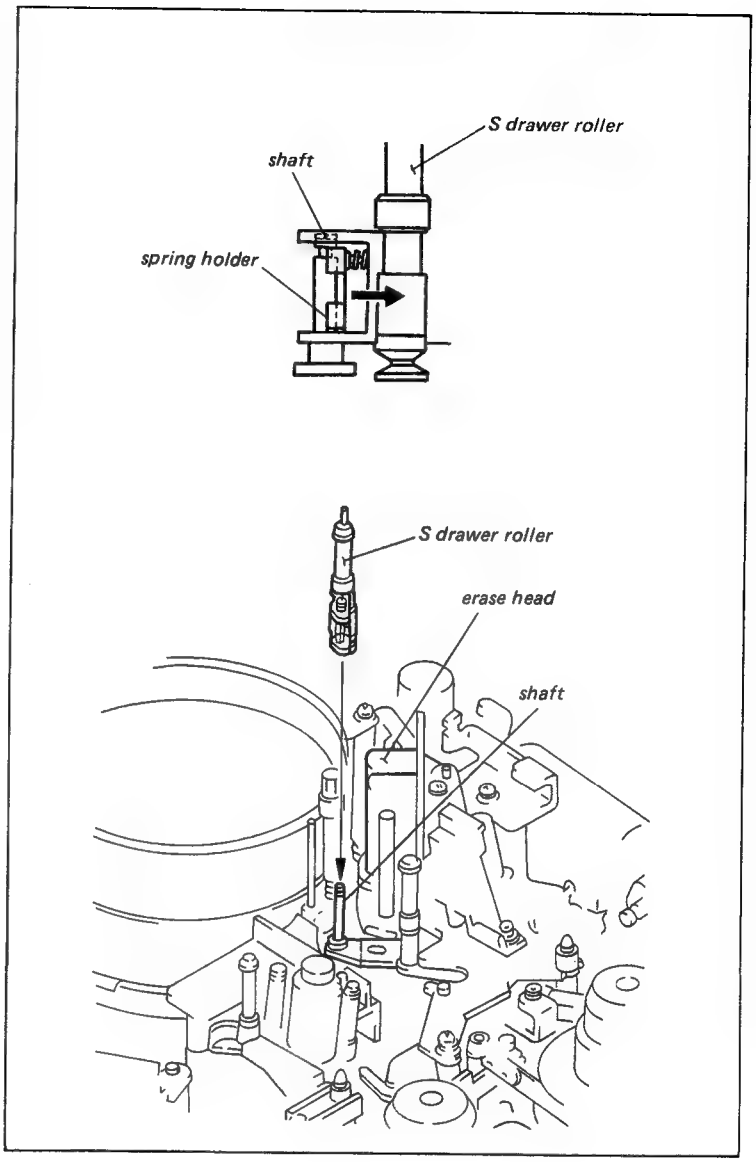
(1) Remove the locking screw and remove the CTL PB head from the chassis.
Do not tighten or loosen three adjusting screws.
(2) Loosen the two fixing screws under the bracket and replace the CTL PB head.



4-5. REPLACEMENT OF S DRAWER ROLLER

Replacement procedure:

(1) Put the machine into the EJECT completion mode without cassette tape.
(2) Turn the pulley of the gear box with finger until the S drawer roller places in front of the CTL PB head.
(3) Remove the S drawer roller from the shaft while pushing the spring holder in the arrow direction.
(4) Install the new S drawer roller into the shaft until the S drawer roller lockes to the shaft while pushing the spring holder in the arrow direction.



4-6. REPLACEMENT/ADJUSTMENT OF TAPE GUIDES ON THREADING RING

Tool and equipment:

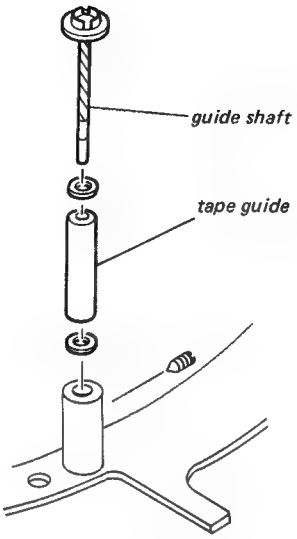
Slide vernier calliper or the equivalent.
Cleaning fluid.

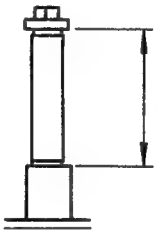
Replacement procedure:

(1) Remove the tape guide.
(2) Clean the surface of the shaft with a cloth dampened with a cleaning fluid.
(3) Assemble the parts.
(4) The sub-ring upper tape guide and lower tape guide are necessary to perform the guide width adjustment.

Adjustment procedure:

(1) Adjust the tape guide width to meet the required specification.





Spec.:
19.4 mm ~ 19.5 mm

4-7. ADJUSTMENT ITEM TABLE AFTER MAIN PARTS REPLACEMENT

Replacement Parts	Adjustment Items
• Threading Ring	Threading Ring Rotation Adjustment (5-3-1) → Gear Box Position Adjustment (5-3-2) → FR Detector Block (5-3-4) → Mounting Position Adjustment → Pinch Roller Self-Alignment Adjustment (5-3-3) → Pinch Lever Pre-set Adjustment (5-4-1) → Pinch Roller Pre-set Adjustment (5-4-2) → FF and REW Modes Tape Path Adjustment (7-1) → T Correction Guide Slantness Adjustment (7-2) → Tape Path Adjustment Around Pinch Roller (7-6, (7-6-1, 7-6-2)) → FWD Mode Tape Path Adjustment (1) (7-3) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Video Tracking Adjustment (7-8-1) → CTL. PB Head Height/Azimuth/Zenith Adjustment (7-8-2) → Video Tracking Adjustment (check). (7-8-1)
• Pinch Roller	Pinch Roller Self-Alignment Adjustment (5-3-3) → Pinch Roller Pre-set Adjustment (5-4-2) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Tape Path Adjustment Around Pinch Roller (7-6, (7-6-1, 7-6-2)) → Video Tracking Adjustment (check). (7-8-1)
• Take-up Reel Table	Reel Table Height and Vertical Play Adjustment (5-1-2) → T Brake Torque Adjustment (6-1-2) → REW Brake Torque Adjustment (6-1-3) → FF and REW Torque Adjustment (6-2) → FWD Torque Adjustment (6-3) → FF and REW Tape Path Adjustment. (7-1)
• Supply Reel Table	Reel Table Height and Vertical Play Adjustment (5-1-2) → S Brake Torque Adjustment (6-1-1) → FF and REW Torque Adjustment (6-2) → REV Torque Adjustment (6-4) → FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment (6-6) → Video Tracking Adjustment (check). (7-8-1)
• Brake Band	FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment. (6-6)
• Capstan Motor	Pinch Lever Right Angle Adjustment (5-11) → Pinch Roller Self-Alignment Adjustment (5-3-3) → Capstan (9-5) → SEARCH x1 Speed Adjustment → Capstan FWD and REV Detector Adjustment (9-9) → Capstan (9-3) → Free Speed Adjustment → Capstan STOP Servo Adjustment (9-4) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Tape Path Adjustment Around Pinch Roller (7-6, (7-6-1, 7-6-2)) → Video Tracking Adjustment (check). (7-8-1)
• Threading Motor	Gear Box Position Adjustment. (5-3-2)
• Reel Motor	FWD Torque Adjustment (6-3) → REV Torque Adjustment (6-4) → Still Speed Adjustment. (9-15-2)
• CTL. PB Head	CTL. PB Head Height/Azimuth/Zenith Adjustment (7-8-2) → Tracking Adjustment (check). (7-8-1)
• Audio/CTL Head	Audio Head Height Adjustment (7-8-3) → Audio Head Azimuth Adjustment (7-8-5) → Video Tracking Adjustment (7-8-1) → Audio Head Height Adjustment (7-8-3) → Audio Head Azimuth Adjustment (7-8-5) → Audio Head Phase Adjustment (7-8-6) → Audio/CTL Head Position Adjustment (7-8-7) → Audio System Alignment. (10-1 ~ 10-11)

Replacement Parts	Adjustment Items
• Drum Assembly	→ Tracking Adjustment (7-8, (7-8-1 ~ 7-8-7) → FF and REW Tape Path Adjustment (7-1) → FWD Mode Tape Path Adjustment (7-4) → REV Mode Tape Path Adjustment (2) → REV Mode Tape Path Adjustment (7-5) → Video Head Dihedral Adjustment (7-9) → Drum AFC Bias Adjustment (9-10) → Drum AFC Transient Adjustment (9-11) → Drum Lock (9-12) → Phase Adjustment → Switching Position Adjustment. (9-14) → PB RF Amplifier Adjustment (11-1, (11-1-1 ~ 11-1-5)) → Record Amplifier Adjustment. (11-4, (11-4-1 ~ 11-4-3))
• Upper Drum Assembly	→ Upper Drum and Eccentricity Adjustment (4-1) → Tracking Adjustment (7-8, (7-8-1 ~ 7-8-7) → FF and REW Tape Path Adjustment (7-1) → FWD Mode Tape Path Adjustment (7-4) → FWD Mode Tape Path Adjustment (2) → REV Mode Tape Path Adjustment (7-5) → Video Head Dihedral Adjustment (7-9) → PB RF Amplifier Adjustment (11-1, (11-1-1 ~ 11-1-5) → Record Amplifier Adjustment. (11-4, (11-4-1 ~ 11-4-3))

SECTION 5
LINK AND DRIVE SYSTEM ALIGNMENT

5-1. REEL TABLE SYSTEM ADJUSTMENT

5-1-1. Cassette Holder Position Adjustment

Tool and equipment:

Reel table height check base jig.
Thickness gauge.

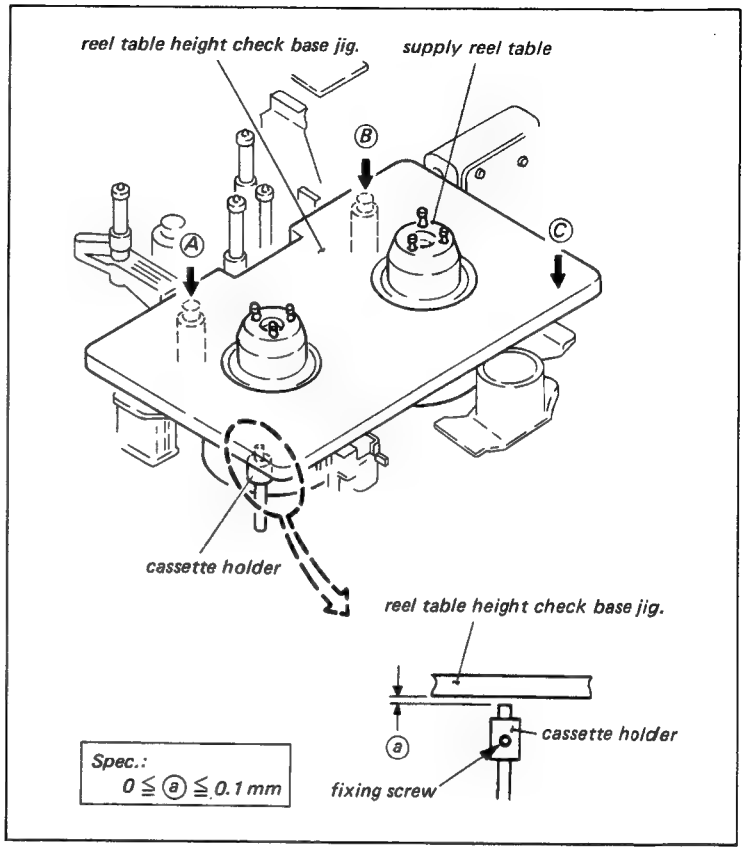
Mode: EJECT completion

Check procedure:

Check that the clearance between the base jig and the cassette holder meets the required specification while pushing lightly the reel table height check base jig marked (A), (B) and (C) toward the chassis.

Adjustment procedure:

Adjust the position of the cassette holder so that meets the required specification.



5-1-2. Reel Table Height and Vertical Play Adjustment

- Since the reel table height from the chassis functions as the reference height in the entire tape thread and run system, it is requested that the reel table height adjustment should be attempted carefully, and deliberately.

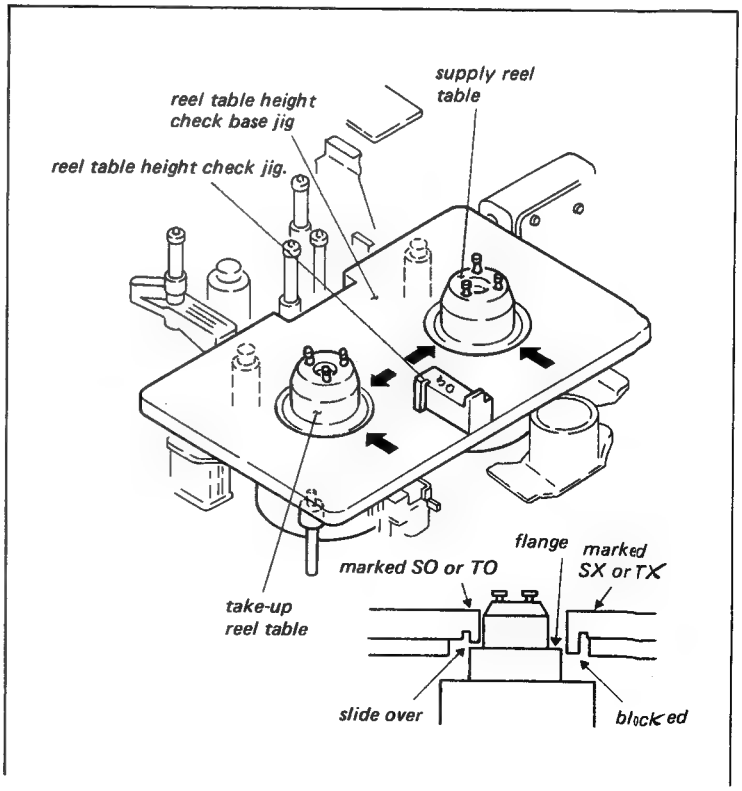
Mode: EJECT completion

Tool and equipment:

Reel table height check base jig.
Reel table height check jig.
Slide vernier callipers or the equivalent.

Check procedure:

(1) The probes of the reel table height check jig marked "SO" and "TO" can slide over the reel table, leaving a space between the jig and the reel table, while the probes marked "SX" and "TX" are blocked, and cannot slide over reel table.
- Use the "SO" and "SX" probes for the supply reel table.
- Use the "TO" and "TX" probes for the take-up reel table.



(2) Fasten a reel table securing screw, and push up and down the reel table for inspection. Check that the vertical play meets the required specification.

Adjustment procedure:

(1) Adjust height by the washer from under the reel table.

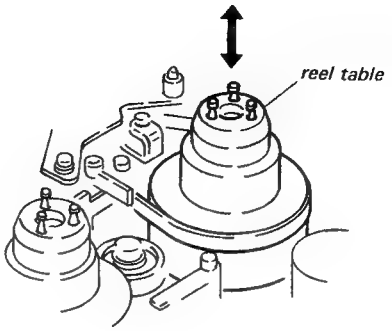
(2) Adjust vertical play by the washer on top of the reel table.

< NOTE >

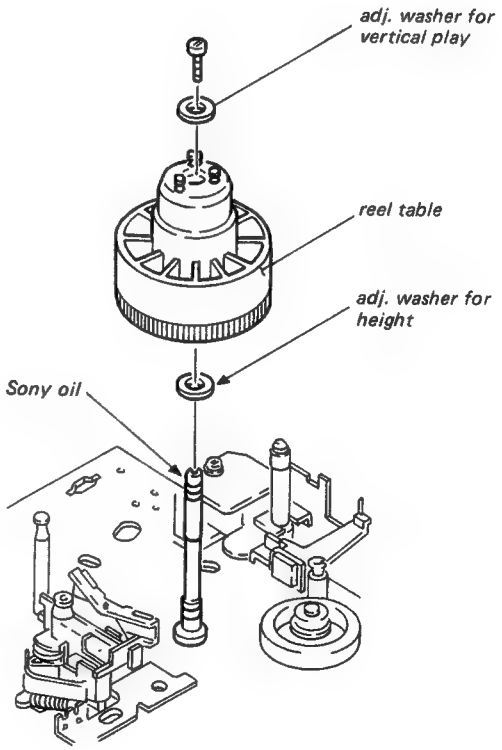
Apply a drop of SONY oil on the reel spindle as shown in figure, whenever the reel table is removed and is adjusted its height with washer.

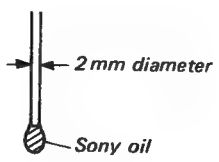
Amount of oil should be one drop that is scooped by tip of 2mm diameter twig such as pencil lead.

- 6 mm diameter washer
  - 0.5 mm thick, 3-701-444-21
  - 0.25 mm thick, 3-701-444-11
  - 0.13 mm thick, 3-701-444-01



Spec.:
vertical play
0.17 mm ~ 0.38 mm





5-2. T DRAWER ARM ADJUSTMENT

5-2-1. T Drawer Arm EJECT Position Adjustment

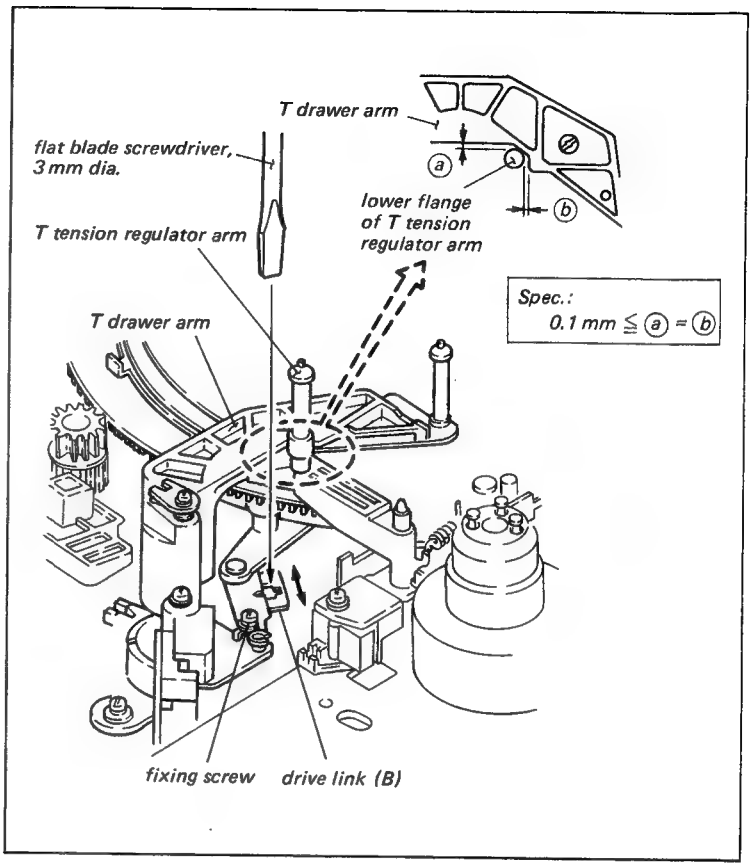
Mode: Setting up FR-STOP mode without cassette tape, and press the EJECT button for setting up EJECT completion state.

Check procedure:

Check that the relationship between the lower flange of T tension regulator arm and the T drawer arm meets the required specification.

Adjustment procedure:

Adjust the position of drive link (B) ass'y by the flat blade screwdriver, 3 mm dia. so that meets the required specification.



5-2-2. Unthread-end Switch Position Adjustment

Tool and equipment:

Black colored vinyl tape (1 cm x 1.5 cm)

Preparation:

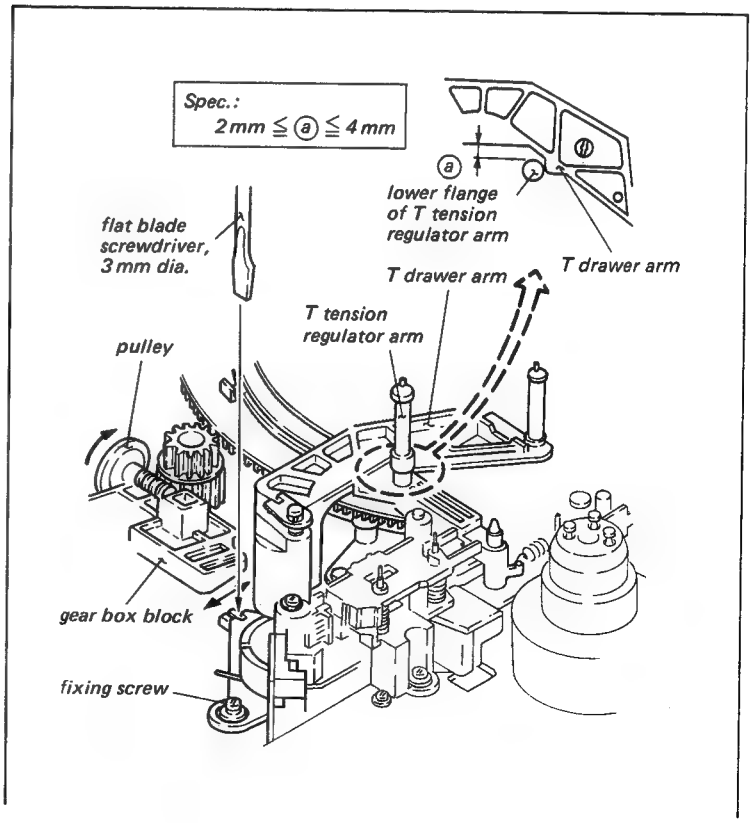
(1) Turn the POWER off in the FR-STOP mode.

(2) Remove the FR detector block, and cover the D2 phote-interrupter (FR-UNTHREAD END Detector) by the black colored vinyl tape.
(Put the FR detector in the FR-STOP mode constantly.)

Check procedure:

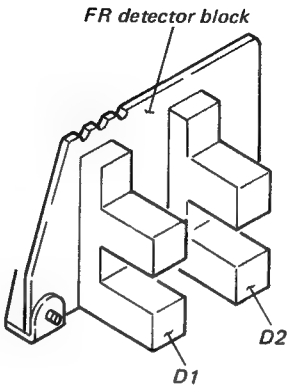
(1) Turn POWER on and rotate the pully of gear box block in the clockwise direction with finger.

(2) While the relationship of the T drawer arm and the T tension regulator arm is shown in the figure, check that a energized noise of the take-up brake solenoid is heard in this moment.



Adjustment procedure:

(1) Adjust the position of the photo interrupter holder by the flat blade screwdriver, 3 mm dia. so that meets the required specification.
(2) Turn POWER off, and mount the FR detector block after peel off the black colored vinyl tape.
(3) Adjust the FR detector block mounted position. (sec. 5-3-4.)
(4) Hook the spring on the FR detector block from the pinch lever block.



5-3. THREADING SYSTEM ADJUSTMENT

5-3-1. Threading Ring Rotation Adjustment

- This adjustment is required only when the threading ring is replaced or removed.
- If the threading ring is left unadjusted to have narrower clearance, the ring rotation becomes heavy, or if left to have wider clearance, tape run during threading, FWD, REV and 10 times picture search modes will be unstable.

Mode: Check mode; EJECT completion/threading/unthreading
Adjustment mode; EJECT completion

Check procedure:

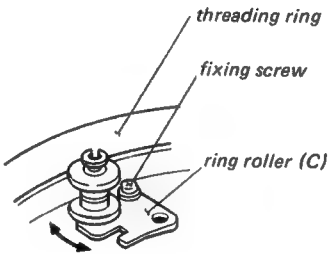
(1) Check that the horizontal play meets the required specification when the threading ring is pushed in the arrow direction in the EJECT completion mode.
(2) Check that the rotation of the threading ring into the threading and unthreading modes are smooth.

Adjustment procedure:

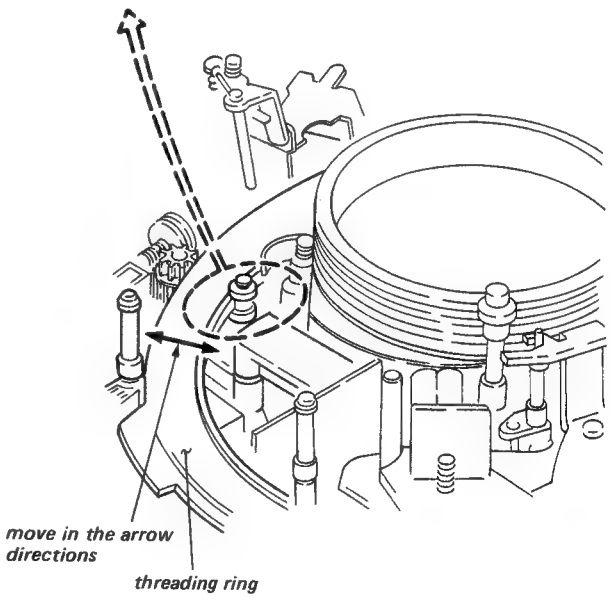
(1) Put the machine into the EJECT completion mode.
(2) Adjust the position of the ring roller (C) so that meets the required specification.

Adjusting procedure;

- Insert a 0.3 mm thick paper between the threading ring and the ring roller (C).
- Paper of this service manual is 0.1 mm thick so that the three fold becomes 0.3 mm thick.



Spec.:
horizontal play
0.2 mm ~ 0.5 mm



5-3-2. Gear Box Position Adjustment

- It is required that the sec. 5-3-1 threading ring rotation adj. is checked to be correct or properly adjusted before initiating this adjustment.

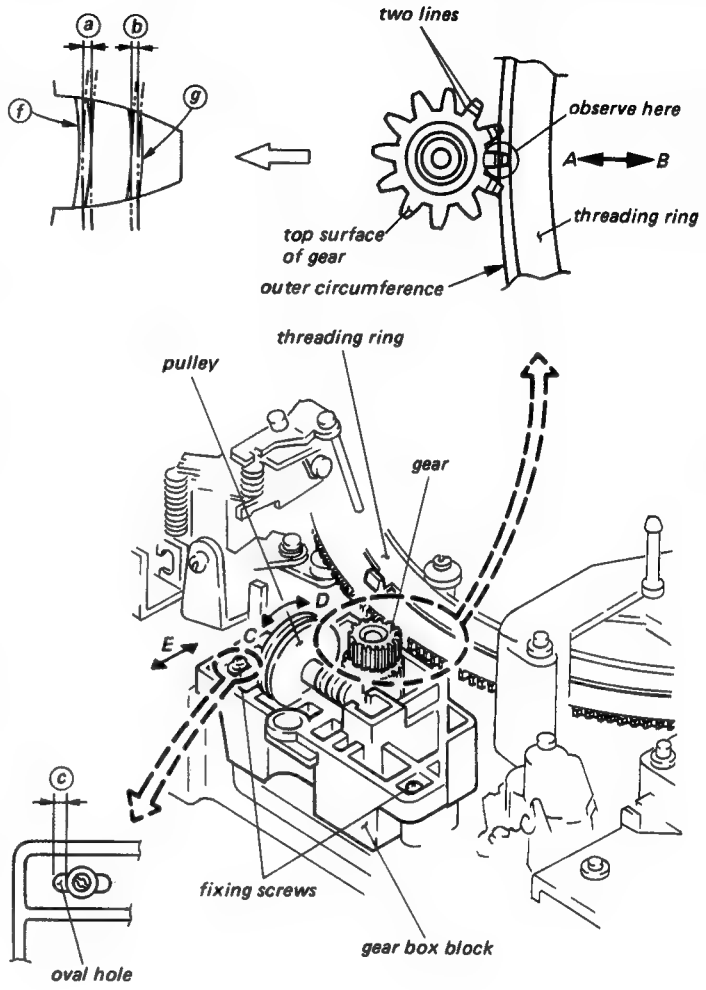
Mode: After completion of EJECT, turn the pulley 1/2 to 1 revolution in the direction of Arrow C in order to push out the Threading.

Check procedure:

(1) In order to make them easier to see during the Adjustment, mark the two lines on the top surface of the gear with a black felt tip pin.
(2) Turn the pulley so that one of the lines is roughly parallel to the outer circumference of the Threading Ring.
(3) Check to be certain that the relationship between the outer circumference of the Threading Ring and the Gear is within the Specifications.

Adjustment procedure:

(1) With the unit's EJECT completed and the pulley turned 1/2 to 1 revolution (as stated above under MODE), turn the pulley back and forth, as indicated by Arrows C and D, so that the Threading Ring and the Gear engage smoothly.
(2) Adjust the position of the Gear Box by moving it in the direction indicated by Arrow E until it is within the Specifications.
(3) Check the sec. 5-3-1 threading ring rotation adj.



Spec.:

(a) When the Threading Ring is moved in the direction of Arrow A, its outer circumference should be on or touching Line "f".
(b) When the Threading Ring is moved in the direction of Arrow B, its outer circumference should be on or touching Line "g".
(c) An oval hole of 0.1 to 1.5 mm should be visible.

5-3-3. Pinch Roller Self-Alignment Adjustment

- If the pinch roller self-alignment is poor, pinch roller's position and inclination against the capstan are erroneous so that the tape will get sear, in the instance of pinch roller's pressing against the capstan.
- Perform the pinch roller pre-set adjustment after this adjustment.

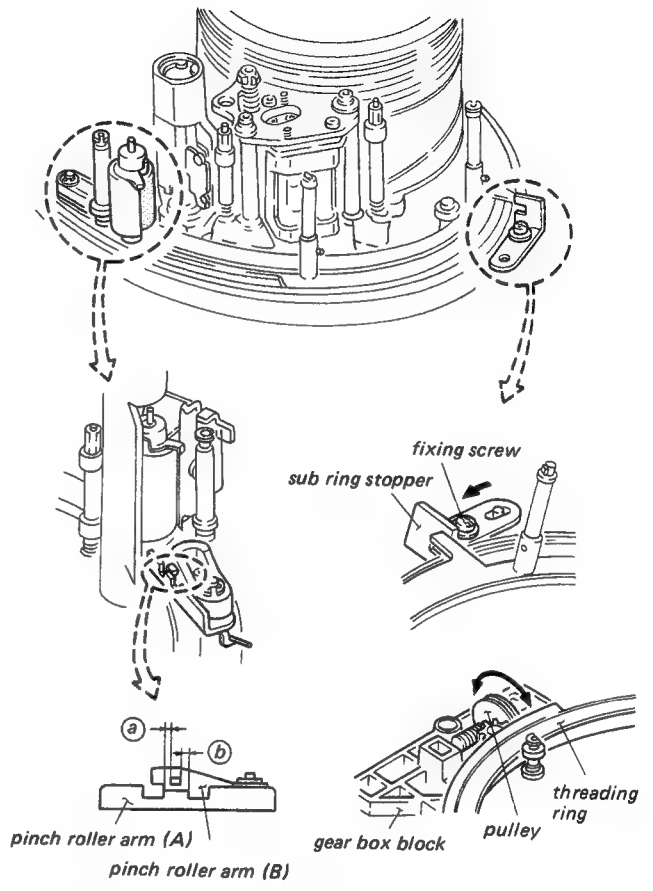
Mode: PLAY

Check procedure:

(1) Put the machine into PLAY mode without cassette.
(2) Check that the relationship between the pinch roller arm (A) and (B) meets the required specification.

Adjustment procedure:

(1) Put the machine into PLAY mode without cassette.
(2) Loosen the fixing screw of sub ring stopper.
(3) Turn the pully of gear box block in the arrow direction with finger.
(4) Push the sub ring stopper in the arrow direction and tighten the fixing screw.
(5) Put the machine once into the FR-STOP mode, and confirm as check procedure.



Spec.:
Clearance (a) and (b) should exist.

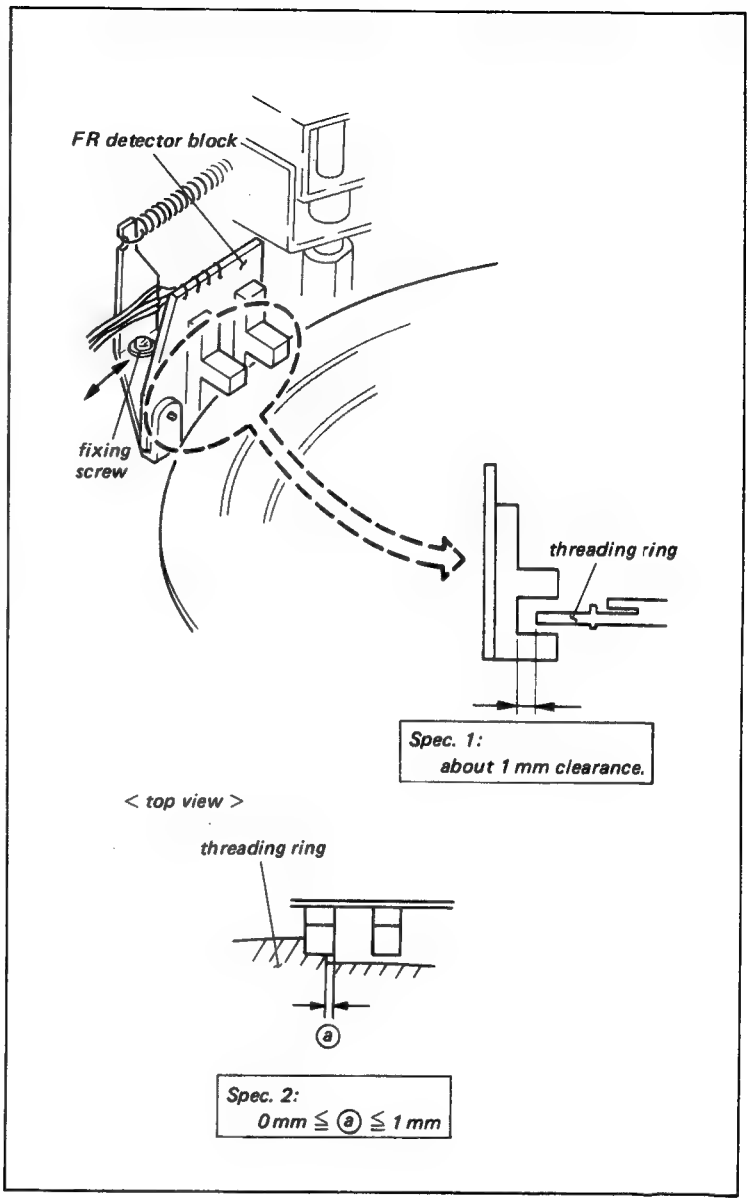
5-3-4. FR Detector Block Mounting Position Adjustment

- It is required that the sec. 5-3-1 threading ring rotation adj. is checked to be correct or properly adjusted before initiating this adjustment.

Mode: Adjustment mode; THREADING completion

Adjustment procedure:

(1) Put the machine into THREADING completion mode and turn POWER off.
(2) Press the FR detector block against the threading ring, and then return about 1 mm. (Don't return more than 1.5 mm) (Spec. 1)
(3) Adjust the position of the FR detector block in the arrow direction so that meets the required specification 2.
(4) Check that the clearance meets the required specification 1.



5-4. PINCH LEVER BLOCK ADJUSTMENT

5-4-1. Pinch Lever Pre-set Adjustment

- It is required that the threading ring rotation adj. and the pinch roller self-alignment adj. are checked to be correct or properly adjusted before initiating this adjustment.

Mode: Turn POWER off in PLAY mode.

Check procedure:

(1) Turn POWER off in PLAY mode. Check that the position of the pinch solenoid pin meets the required specification.

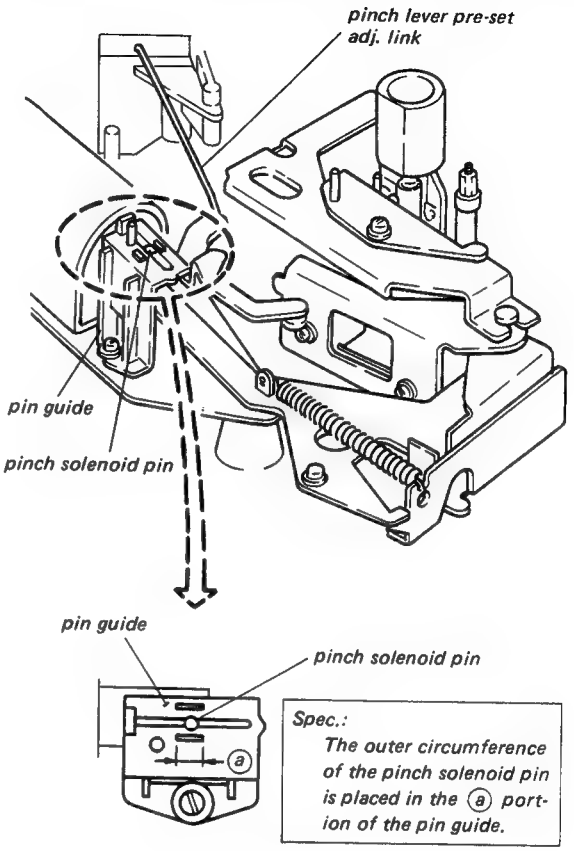
(2) Turn POWER on, and press the PLAY button after once unthreading. Check as procedure (1).

Adjustment procedure:

(1) Adjust the position of pinch solenoid within the specified value, refer to sec. 5-8-5.

(2) If not in step (1), perform the pinch roller self-alignment adjustment within the specified value, refer to sec. 5-3-3.

(3) If not in step (1) and (2), select the pinch lever pre-set adjustment link to the proper hole of the preset lever ass'y to meets the specification.



5-4-2. Pinch Roller Pre-set Adjustment

- It is required that the threading ring rotation adj. and the pinch roller self-alignment adj. are checked to be correct or properly adjusted before proceeding this adjustment.

Mode: Turn POWER off in PLAY mode.

Tool and equipment:
Thickness gauge

Check procedure:

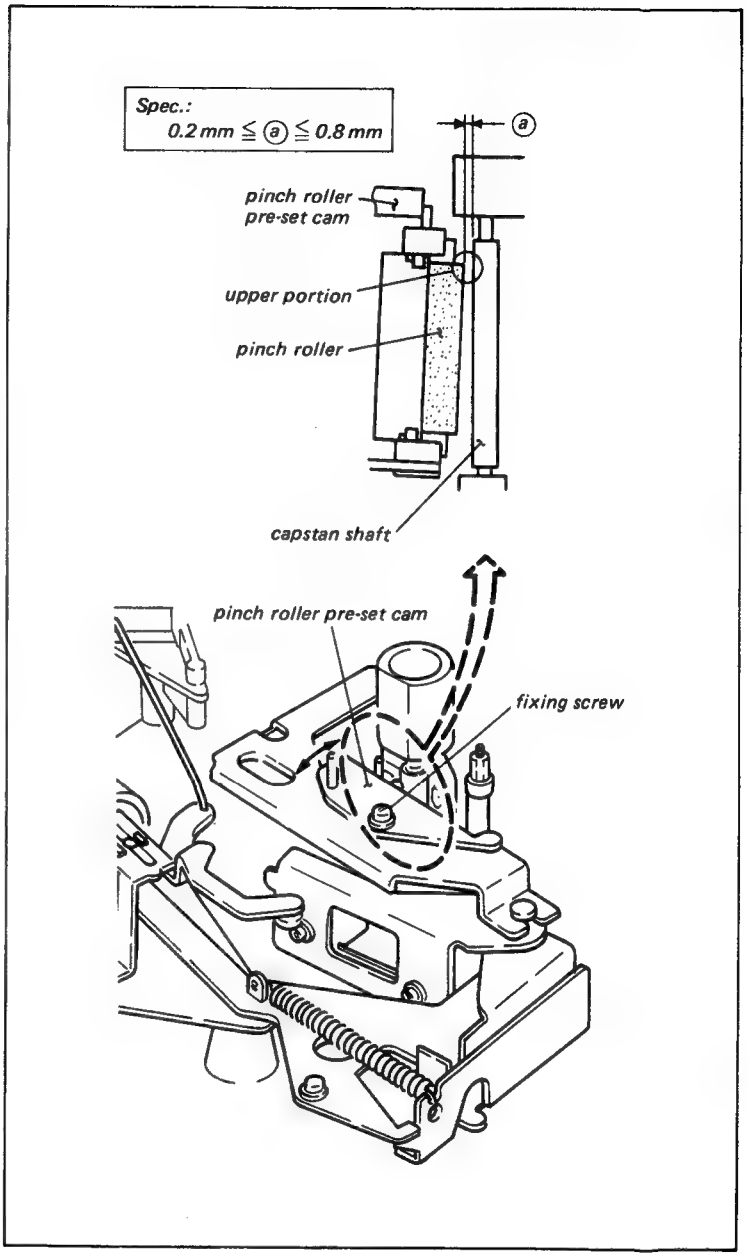
(1) Turn POWER off in PLAY mode. Check that the clearance between the upper portion of pinch roller and the capstan shaft meets the required specification.

(2) Turn POWER on, and press the PLAY button after once unthreading. Check as procedure (1).

Adjustment procedure:

(1) Turn POWER off. Move the position of the pre-set cam in the arrow direction so that meets the required specification.

(2) Confirm as check procedure in this step.



5-4-3. Pinch Solenoid Block Position Adjustment

Mode: PLAY

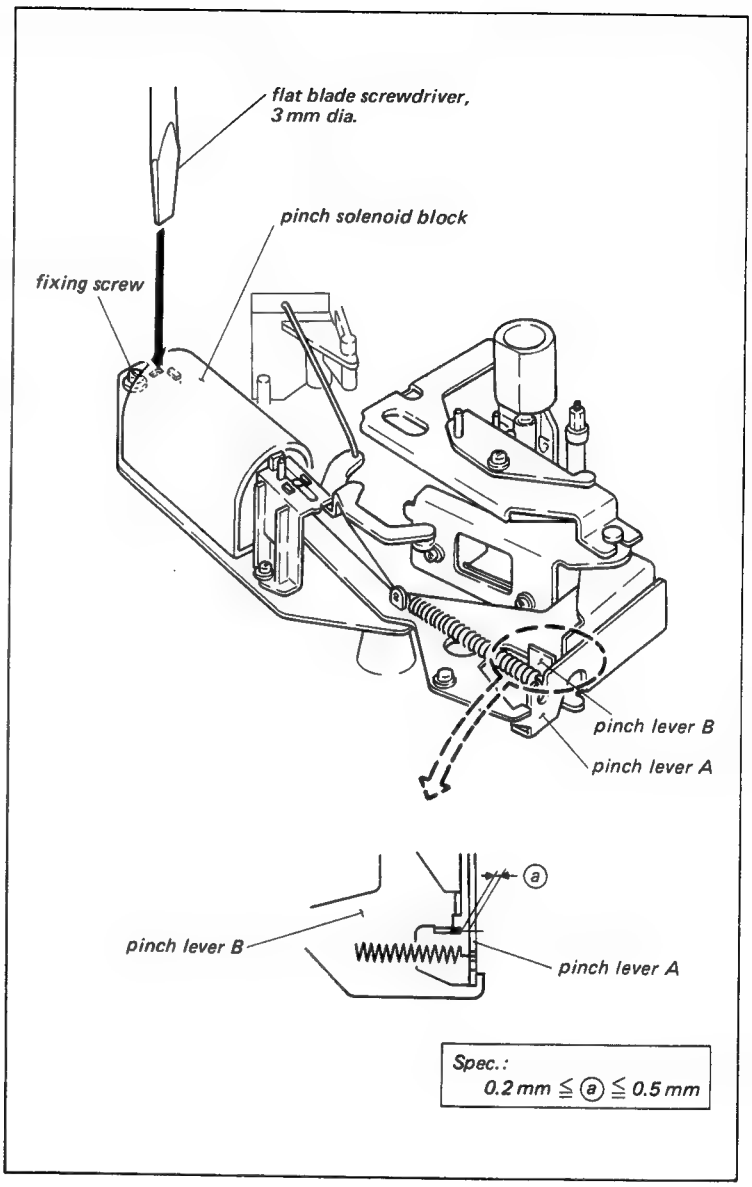
Tool and equipment:
Thickness gauge

Check procedure:

(1) Thread a tape and put the machine into PLAY mode.
(2) Check that the clearance between the pinch lever A and B meets the required specification.
(3) Repeat the unthreading/threading two or three times. Check as procedure (2).

Adjustment procedure:

(1) Adjust the position of the pinch solenoid block by the flat blade screwdriver, 3 mm dia. in PLAY mode so that meets required specification.
(2) Confirm as check procedure (2) and (3).



5-5. T TAPE SENSOR POSITION ADJUSTMENT

- There are two adjustments of the height and the clearance between a tape and LED in this section.

Mode: Thread a tape and put the machine into FR-STOP and PLAY modes.

Tool and equipment:
Thickness gauge

Check procedure:

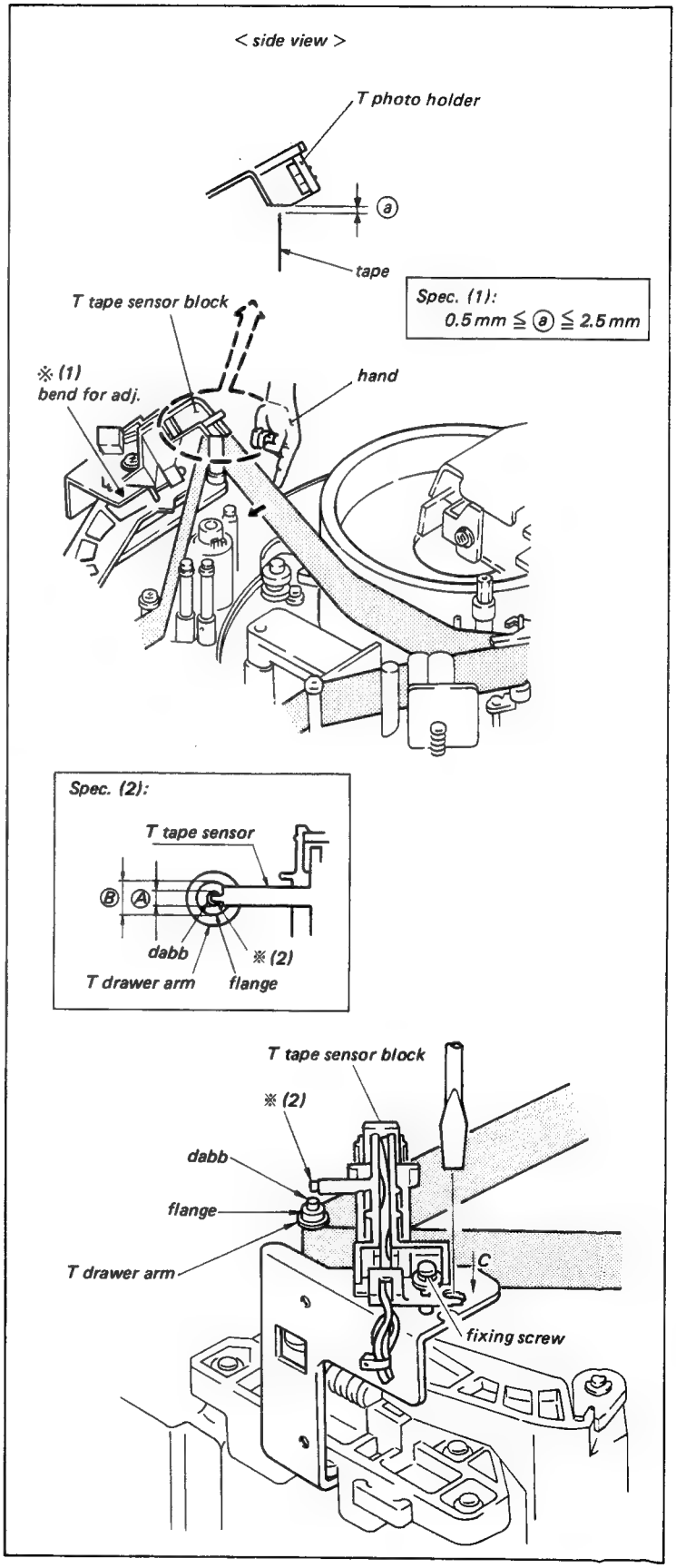
(1) Thread a tape and put the machine into FR-STOP mode. Push the tape against the cassette tape side with finger as shown in figure. Check that the clearance between the upper edge of a tape and the under side of T photo holder block (black colored plastic) meets the required specification (Spec. (1)).

(2) Next, when set to PLAY mode from FR-STOP mode, confirm ※ (2) part of the T Tape sensor block within the specification B of Spec. (2).

Adjustment procedure:

(1) Bend the ※ (1) marked position in figure with pliers so that meets the required specification. Confirm as check procedure (2).

(2) Set to PLAY mode from FR-STOP mode and adjust C block so that ※ (2) part of T Tape sensor becomes within the specification A of Spec. (2).



5-6. TENSION ARM SYSTEM ADJUSTMENT

5-6-1. S Drawer Roller Ass'y Limiter Adjustment

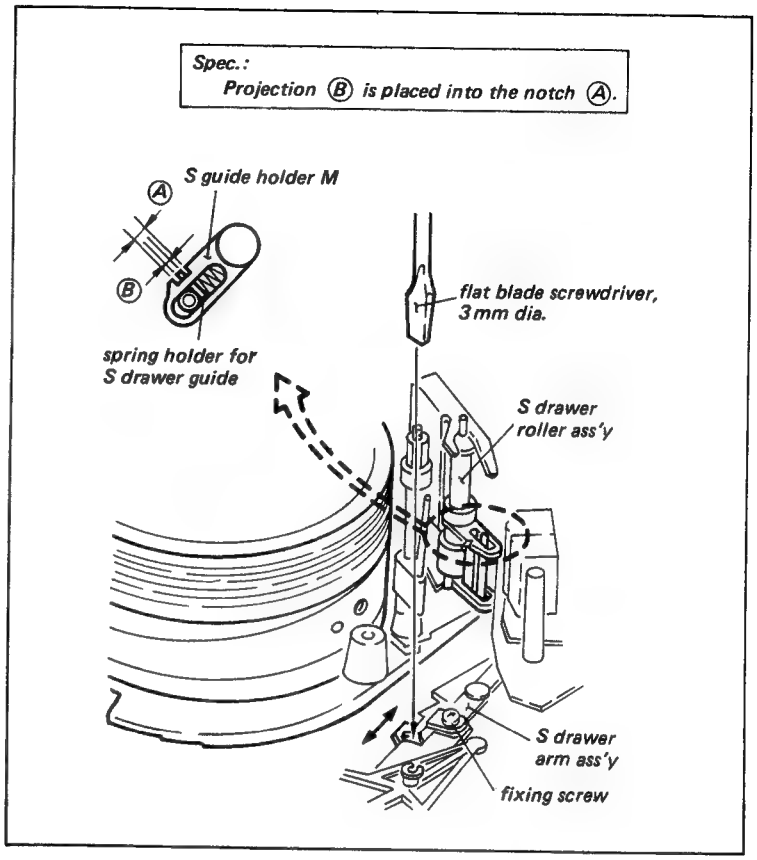
Mode: FR-STOP

Check procedure:

Check that the spring holder for S drawer guide, marked Ⓑ, of the S drawer arm ass'y is placed into notch of the S guide holder M, marked Ⓐ.

Adjustment procedure:

(1) Adjust the position of the S drawer arm ass'y by the flat blade screwdriver, 3 mm dia. so that meets the required specification.



5-6-2. T Tension Regulator Operating Position Adjustment

Mode: FR-STOP

Tool and equipment:

Thickness gauge

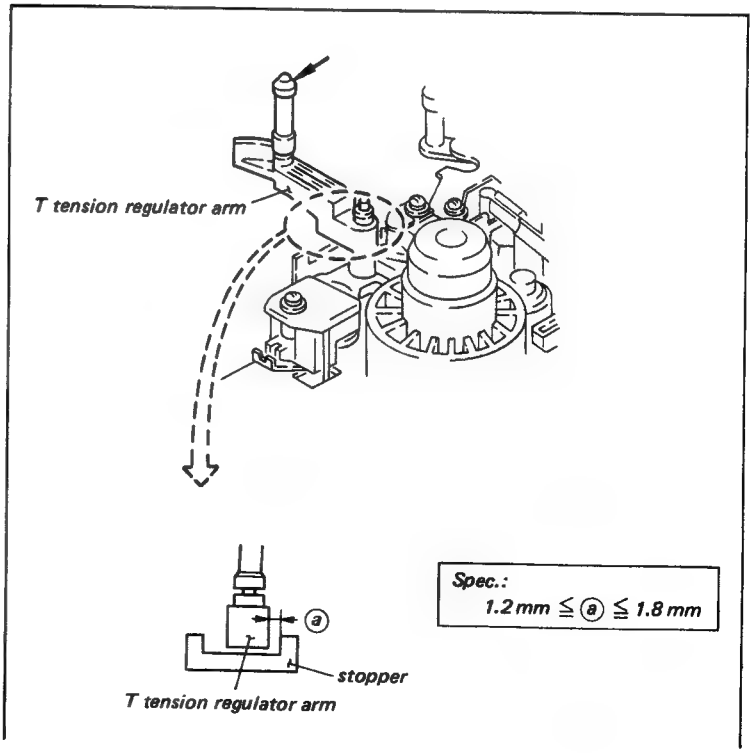
Check procedure:

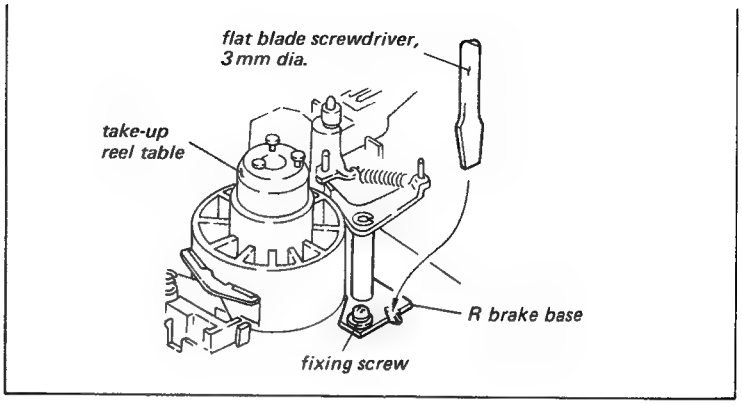
(1) Push the T tension regulator arm lightly to the left with finger as far as it will go (in the arrow direction), and remove the finger gently.

(2) Check that the clearance between T tension regulator arm and stopper meets the required specification.

Adjustment procedure:

(1) Adjust the position of R brake lever by the flat blade screwdriver, 3 mm dia. so that meets the required specification.





5-6-3. S Tension Regulator Operating Position Adjustment

Mode: FF

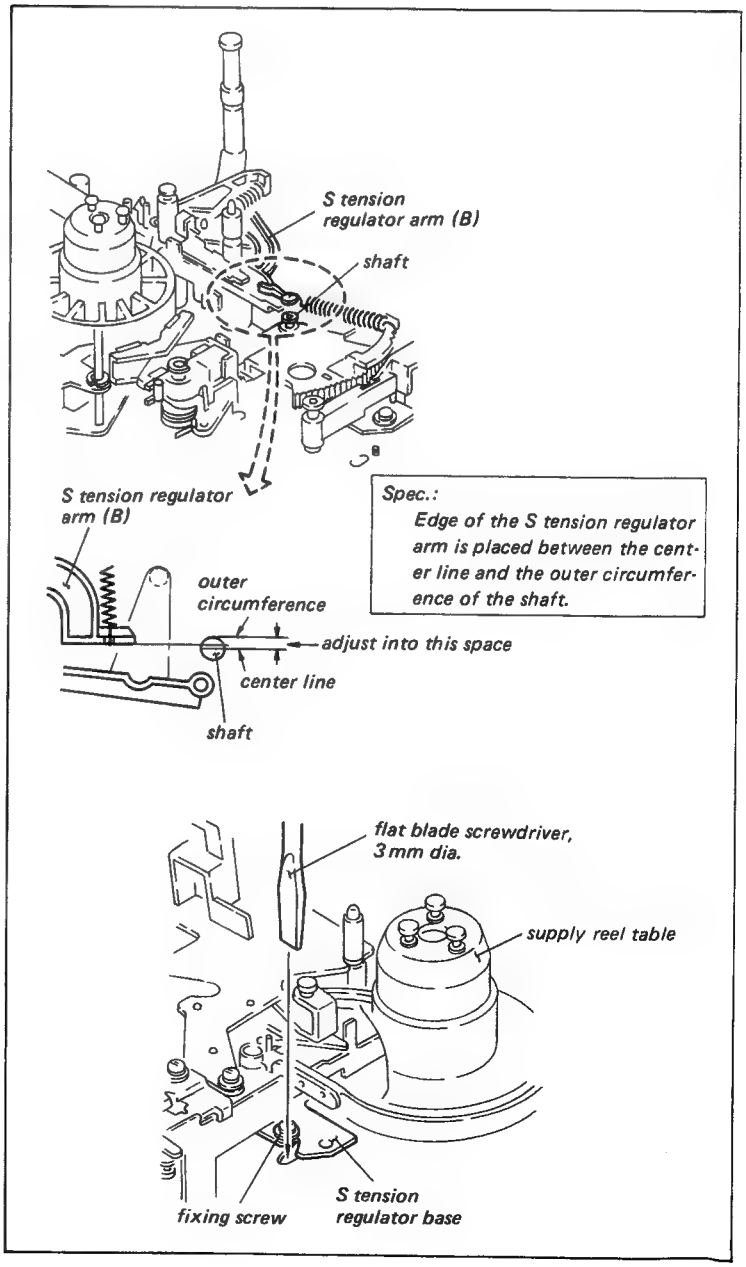
Check procedure:

(1) Put the machine into FF mode without cassette tape.

(2) Check that the edge of S tension regulator arm (B) meets the required specification.

Adjustment procedure:

(1) Adjust the position of S tension regulator base so that meets the required specification.



5-6-4. Tension Detector Position Adjustment

Mode: FWD/REV

Tool and equipment:
DC voltmeter

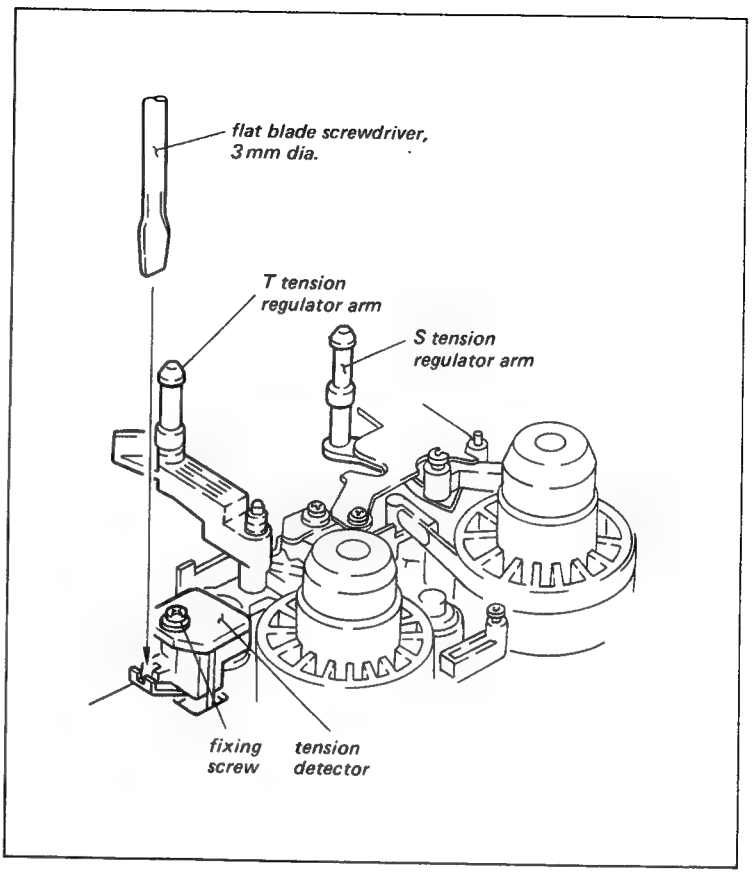
Preparation: Connect dc voltmeter to TP17/SY-68 board.

Check procedure:

(1) Put the machine into FWD mode without cassette tape.
(2) Push the T tension regulator arm to the right with finger as far as it will go. Check that the dc voltage is more than 9 V.
(3) Push the T tension regulator arm to the left with finger as far as it will go. Check that the dc voltage is less than 2 V.
(4) Put the machine into REV mode.
(5) Push the S tension regulator arm to the right with finger as far as it will go.
Check that the dc voltage is less than 2 V.
(6) Push the S tension regulator arm to the left with finger as far as it will go. Check that the dc voltage is more than 9 V.

Adjustment procedure:

(1) Adjust the position of tension detector so that meets the required specification.



5-7. 10 TIMES PICTURE SEARCH OPERATING POSITION ADJUSTMENT

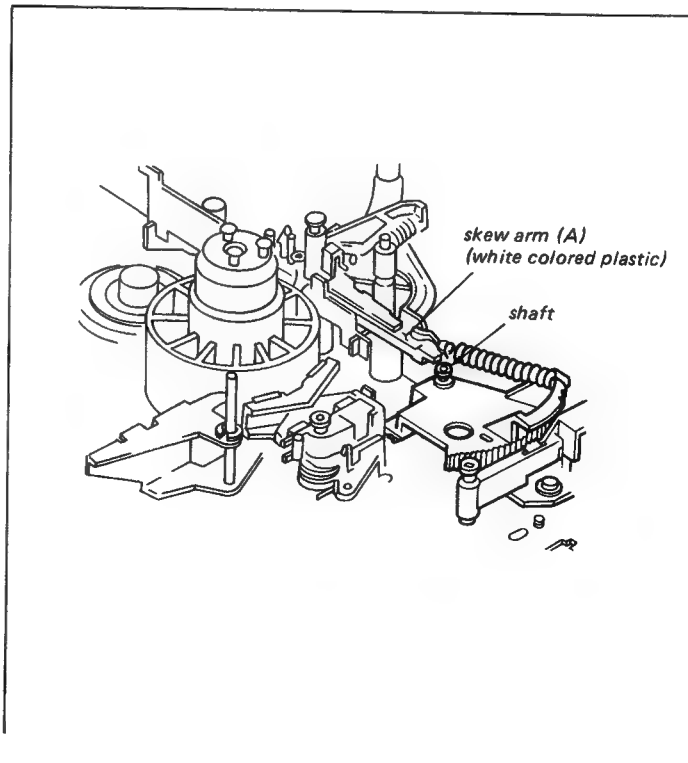
Mode: EJECT completion

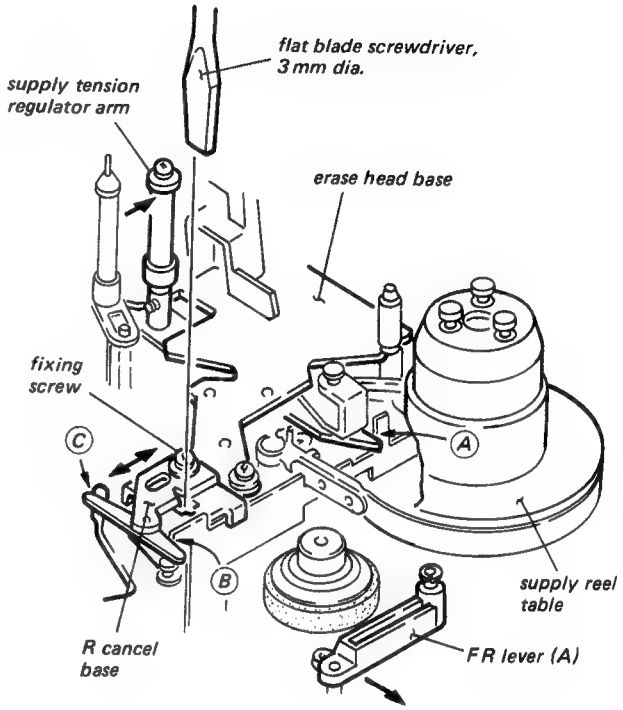
Check procedure:

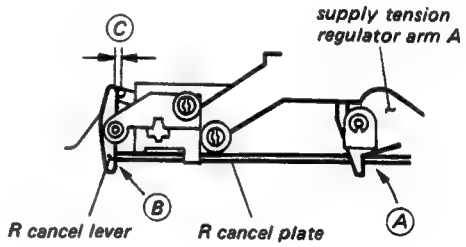
(1) Turn the gear box pully to the counterclockwise so that the right-end round hole of skew arm (A) is placed to the just above the shaft on the chassis as shown in figure (viewing through the round hole of skew arm (A)).
(2) Move the FR lever (A) in the arrow direction as far as it will go. Check that the clearances Ⓐ, Ⓑ and Ⓒ meets the required specification.
(3) Press the supply tension regulator arm in the arrow direction and take hand off. Confirm as procedure (2).

Adjustment procedure:

(1) Adjust the position of the R cancel base with the flat blade screwdriver, 3 mm dia. so that meets the required specification.
(2) Confirm as check procedure (3).







Spec.:
Ⓐ Ⓑ : There are no clearances.
0.1 mm ≦ ⓒ ≦ 0.5 mm

5-8. SOLENOID SYSTEM ADJUSTMENT

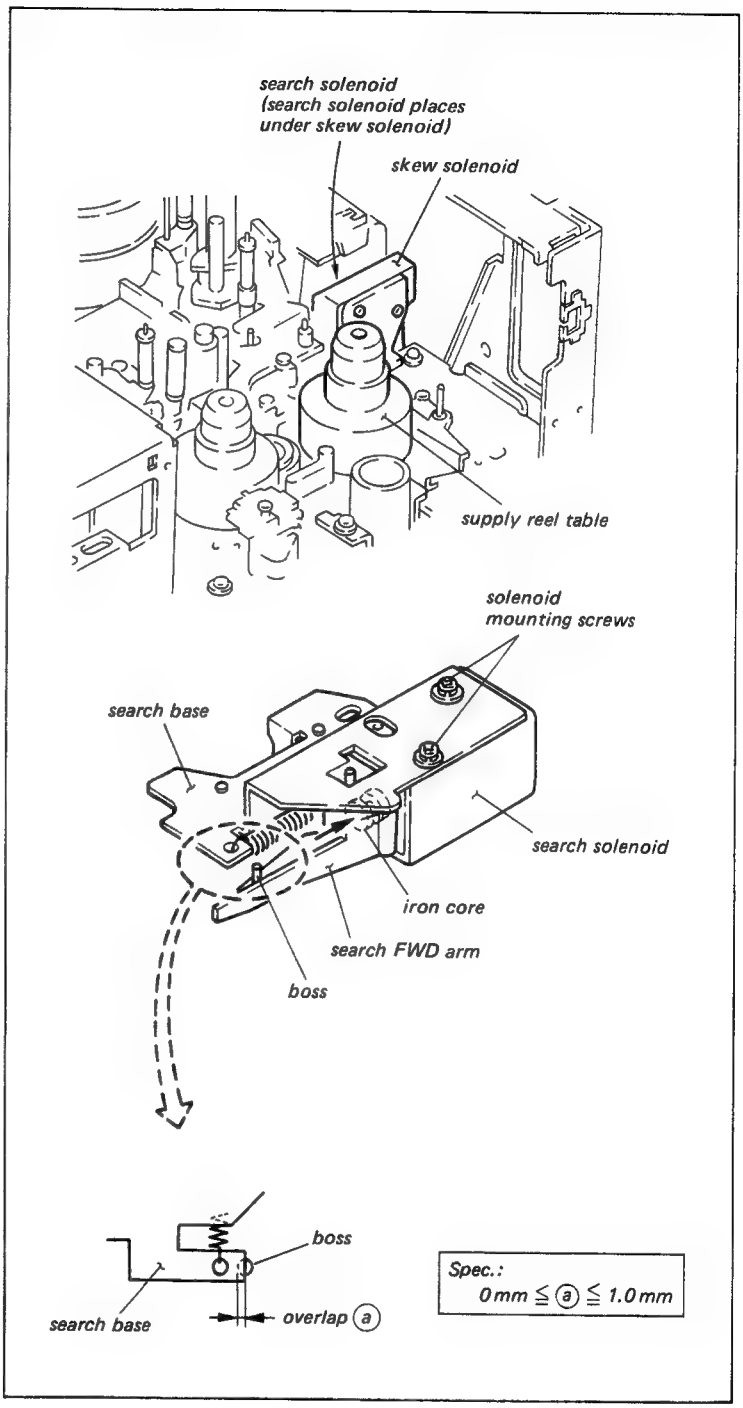
5-8-1. Search Solenoid Mounting Position Adjustment

- This adjustment is usually not required. But proceed with the following step only when the search solenoid is replaced or removed.

Mode: Remove the search solenoid block from the chassis.

Adjustment procedure:

Move the iron core into the fully energized position (indicated by the arrow as far as it will go). Adjust the mounting position of the search solenoid so that the overlap of the search FWD arm boss and the search base meet the required specification.



5-8-2. Skew Solenoid Mounting Position Adjustment

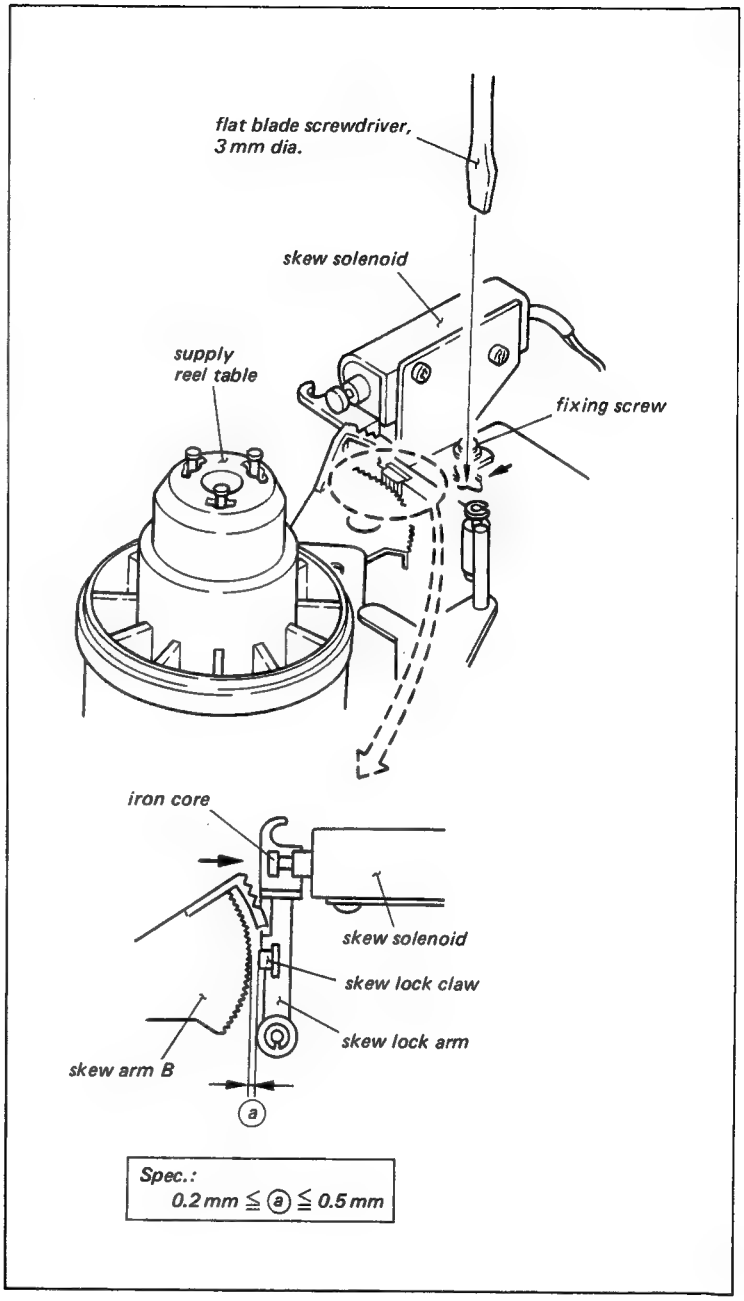
Mode: EJECT completion

Check procedure:

Check that the clearance between the skew lock claw and the skew arm B meets the required specification when the skew solenoid iron core is push in the arrow direction.

Adjustment procedure:

Adjust the position of the skew solenoid with a flat blade screwdriver, 3 mm dia. so that meets the required specification.



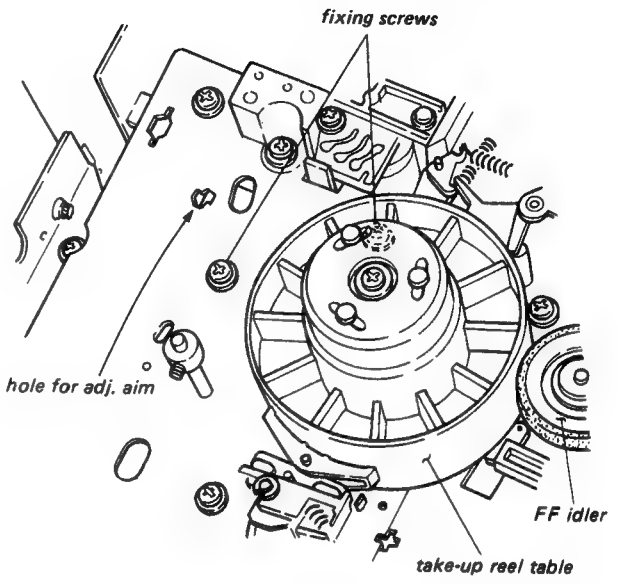
5-8-3. T Idler Solenoid Position Adjustment

- This adjustment is performed when T idler solenoid is replaced or removed and F.FWD torque does not meet the specification.

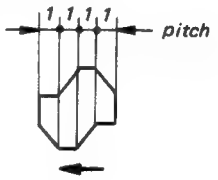
Mode: F.FWD mode without cassette tape

Adjustment procedure:

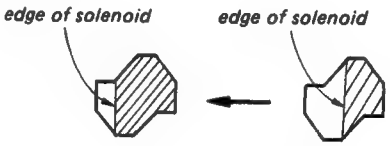
(1) Put the machine into F.FWD mode without cassette tape.
(2) Loosen the T idler solenoid fixing screws about 1/2 turn.
(3) Adjust the position of the T idler solenoid so that 0.01 ~ 0.1 mm clearance exists between the take-up reel table and the FF idler.
(4) Note the hole to be provided for adjusting aim after proceeding the procedure (3).
Confirm that where the edge of this solenoid is placed in this hole.
(5) Move the solenoid in the arrow direction only one pitch from the position of procedure (4), and tighten the fixing screws.



< hole for adj. aim >



< for example >



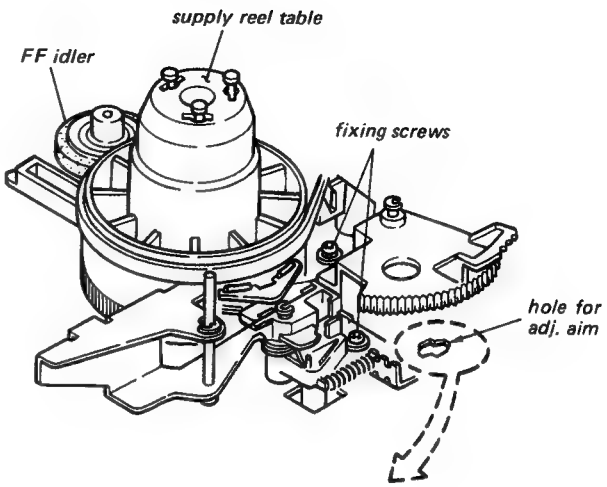
5-8-4. S Idler Solenoid Position Adjustment

- This adjustment is required only when the supply idler solenoid is replaced or removed and the REW torque does not meet the specification.

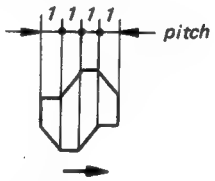
Mode: REW mode without cassette tape

Adjustment procedure:

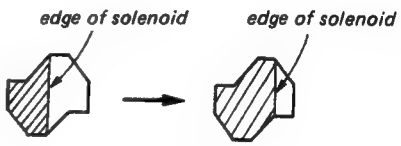
(1) Put the machine into REW mode without cassette tape.
(2) Loosen the supply idler solenoid fixing screws about 1/2 turn.
(3) Adjust the position of the S idler solenoid so that 0.01 ~ 0.1 mm clearance exists between the supply reel table and the FF idler.
(4) Note the hole to be provided for adjusting aim after proceeding the procedure (3).
Confirm that where the edge of this solenoid is placed in this hole.
(5) Move the solenoid in the arrow direction only one pitch from the position of procedure (4). Tighten fixing screws.



< hole for adj. aim >



< for example >



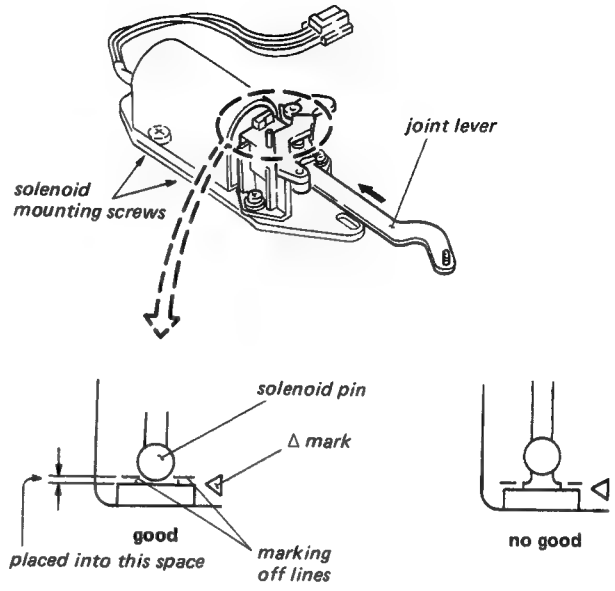
5-8-5. Pinch Solenoid Mounting Position Adjustment

- This adjustment is usually not required. Proceed with the following step only when the pinch solenoid is replaced or removed.

Mode: Remove the pinch solenoid block from the chassis.

Adjustment procedure:

Move the joint lever into the fully energized position (indicated by the arrow as far as it will go). Adjust the solenoid mounting position so that the outer circumference of solenoid pin meets the required specification.



Spec.:
The outer circumference of solenoid pin is placed into between Δ mark and marking off lines.

5-8-6. 10 Times Picture Search Solenoid Mounting Position Adjustment

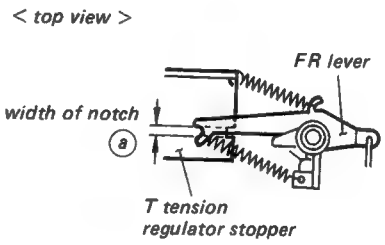
Mode: EJECT completion

Check procedure:

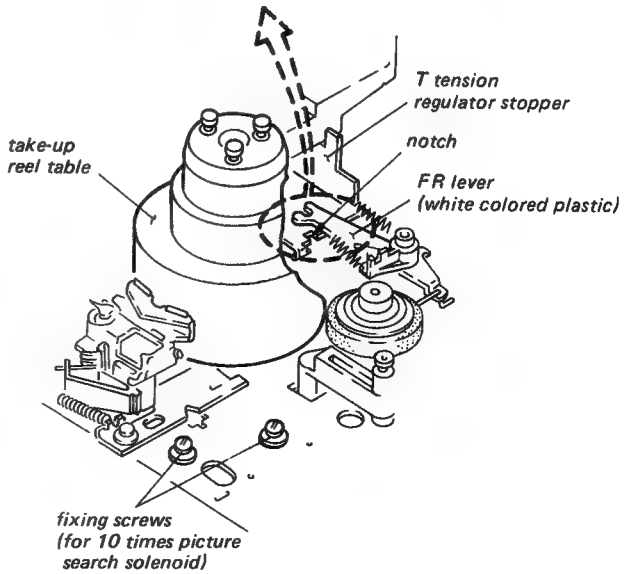
(1) Put on the machine right side down.
(2) Press the iron core of 10 times picture search solenoid, near the white pully, into the fully energized position (indicated by the arrow with finger).
(3) Check that the relationship between the edge of FR lever and the T tension regulator stopper notch under the FR lever meets the required specification.

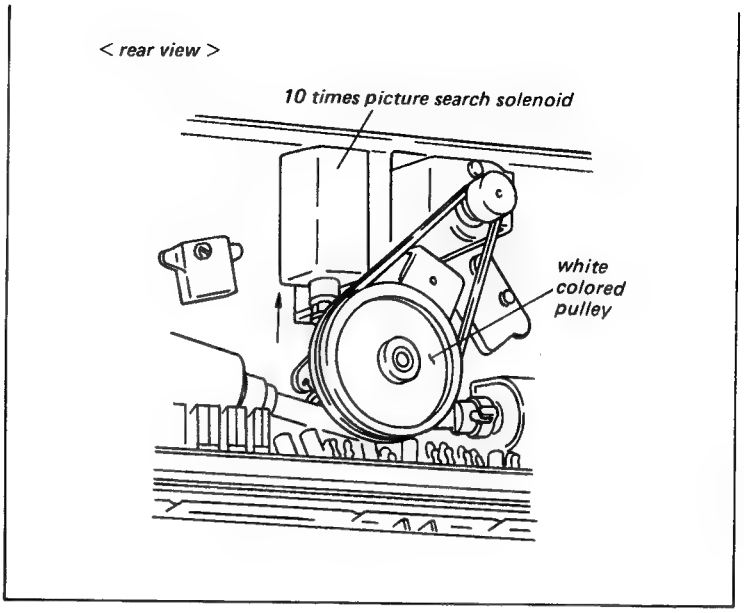
Adjustment procedure:

(1) Adjust the position of the 10 times picture search solenoid so that meets the required specification.



Spec.:
The edge of the FR lever is placed into the notch (ⓐ) of the T tension regulator stopper from viewing the top of the machine.





5-8-7. T Brake Solenoid Position Adjustment

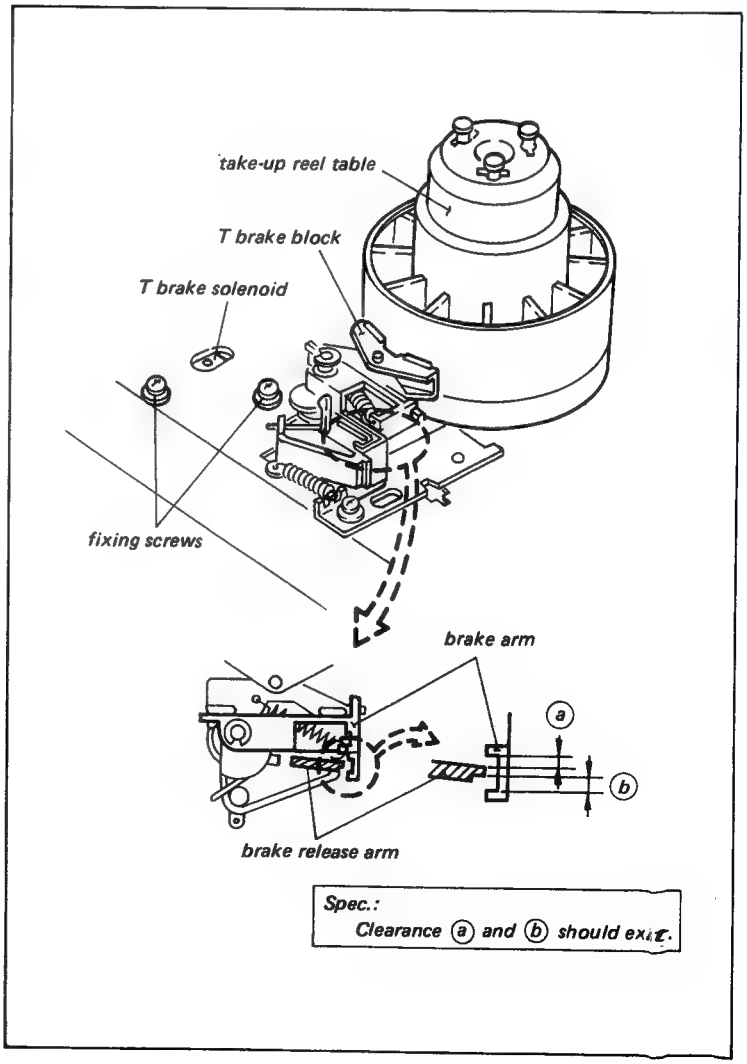
Mode: REW mode without cassette tape

Check procedure:

Check that the relationship between the brake release arm and the brake arm meets the required specification.

Adjustment procedure:

Adjust the position of the T brake solenoid so that meets the required specification.



5-8-8. S Brake Solenoid Position Adjustment

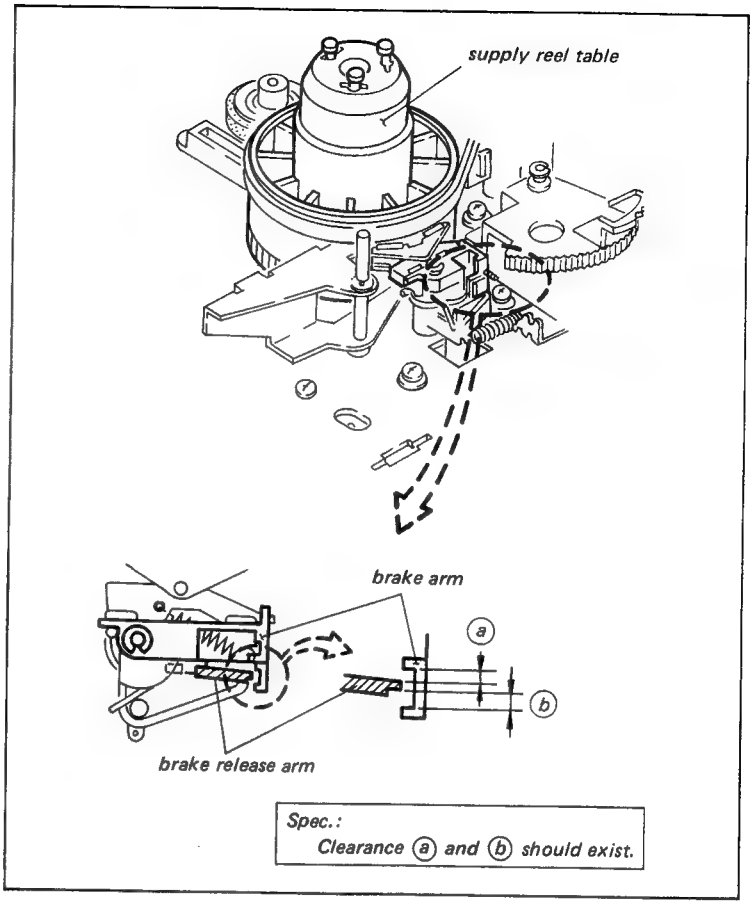
Mode: REW mode without cassette tape

Check procedure:

Check that the relationship between the brake release arm and the brake arm meets the required specification.

Adjustment procedure:

Adjust the position of the S brake solenoid so that meets the required specification.



5-9. CASSETTE-UP COMPARTMENT ADJUSTMENT

- The cassette-up compartment has two photo-electrical switches. The on/off timing of these switches are adjusted as follows.

5-9-1. Cassette-in Switch Position Adjustment

Tool and equipment:

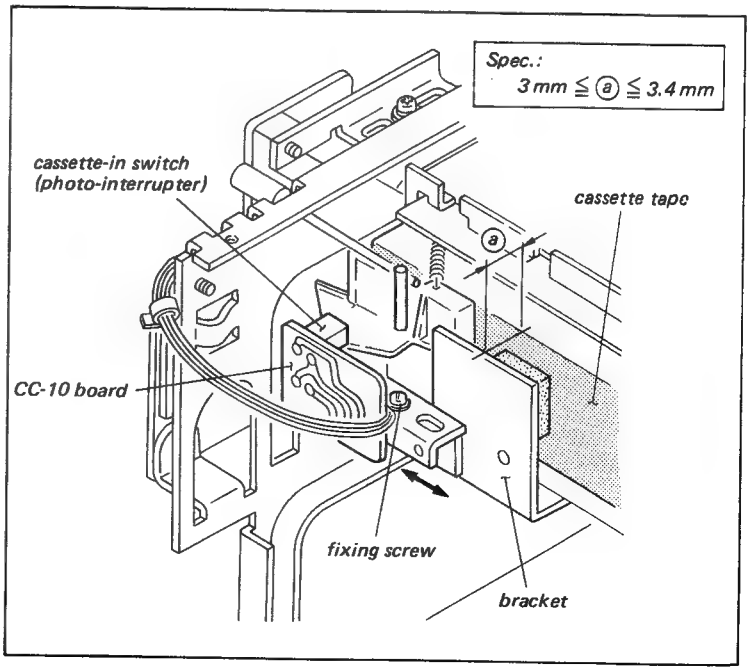
KCA type cassette tape.
Tester.
Thickness gauge.

Preparation: (1) Remove the cassette-up compartment from the chassis.

(2) Connect the plug of the harness for cassette-up compartment and the terminal on the CC-9 board with the jumper leads.

plug of harness (CN1)	terminal on CC-9 board
4pin (5 V) ⟷	4pin/CN1
5 or 2pin (GND) ⟷	5 or 2pin/CN1

(3) Turn POWER on.



Check procedure:

(1) Connect the tester to ② terminal on CC-9 board.
(2) Insert a KCA type cassette tape slowly.
(3) Check that the clearance between the front side of the cassette tape and the bracket of cassette-up compartment meets the required specification when the tester is turned "H" level (about 5 V).

Adjustment procedure:

(1) Adjust the position of the cassette-in switch in the arrow direction so that meets the required specification.

Adjusting procedure;

Insert a 3.3 mm thick thickness gauge between cassette tape and bracket. Adjust the position of the cassette-in switch so that the tester is turned to "H" in this position.

5-9-2. Cassette-down Switch Position Adjustment

Tool and equipment:

Tester

Preparation

(1) Remove the cassette-up compartment from the chassis.
(2) Connect the plug of the harness for cassette-up compartment and the terminal on CC-9 board with the jumper leads.

plug of harness (CN1)	terminal on CC-9 board
4pin (5 V) ←→	4pin/CN1
5 or 2pin (GND) ←→	5 or 2pin/CN1

(3) Turn POWER on.

Check procedure:

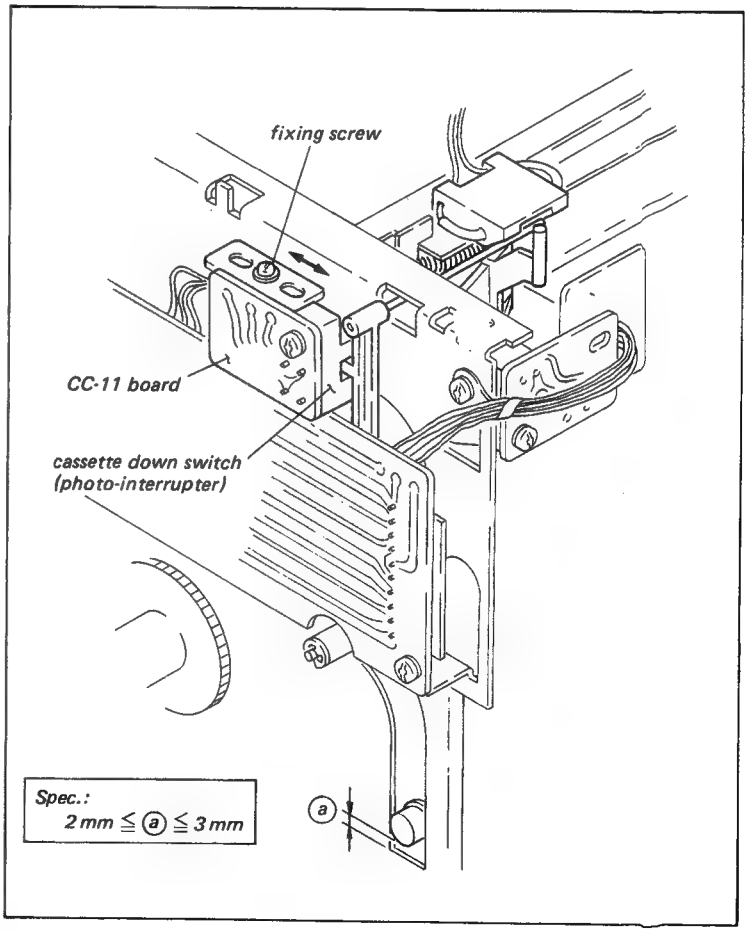
(1) Connect the tester to ⑤ terminal on CC-9 board.
(2) Turn the white colored gear on the right side of the cassette-up compartment in the clockwise direction.
(3) Check that the clearance between the roller and the guide meets the required specification.

Adjustment procedure:

(1) Adjust the position of the cassette-down switch in the arrow direction so that meets the required specification.

Adjusting procedure;

Turn the gear on the right side so that the clearance between the roller and the guide is 2.2 mm clearance. Adjust the position of the cassette-down switch so that the tester is turned to "H" in this position.



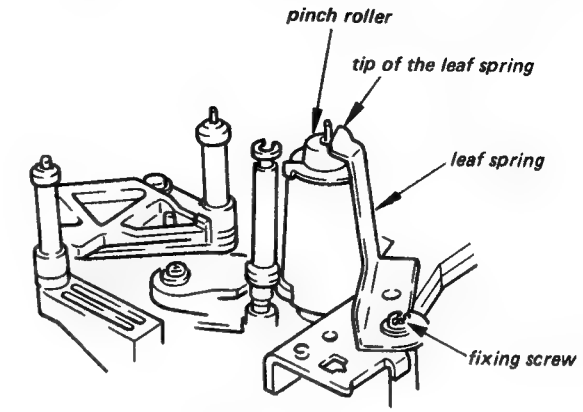
5-10. LEAF SPRING POSITION ADJUSTMENT

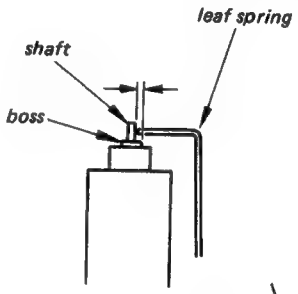
Check procedure:

(1) Turn on POWER. Put the machine into the EJECT mode after put into the PLAY mode once.
(2) Turn the gear box pulley with finger so that the edge of the T drawer arm is placed into the center of the shaft as shown in figure.
(3) Check that the relationship between leaf spring and pinch roller shaft meets the required specification 1.
(4) Put the machine into the EJECT completion mode. Check that the clearance between leaf spring and pinch roller.

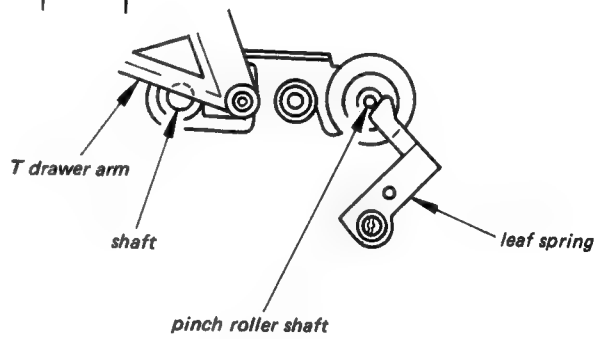
Adjustment procedure:

(1) Adjust the position of the leaf spring so that meets the required specifications.





Spec. 1:
Tip of the leaf spring is placed between the shaft and the outer surface of the boss.



Spec. 2:
Clearance ⓐ should exist.

5-11. PINCH LEVER RIGHT ANGLE ADJUSTMENT

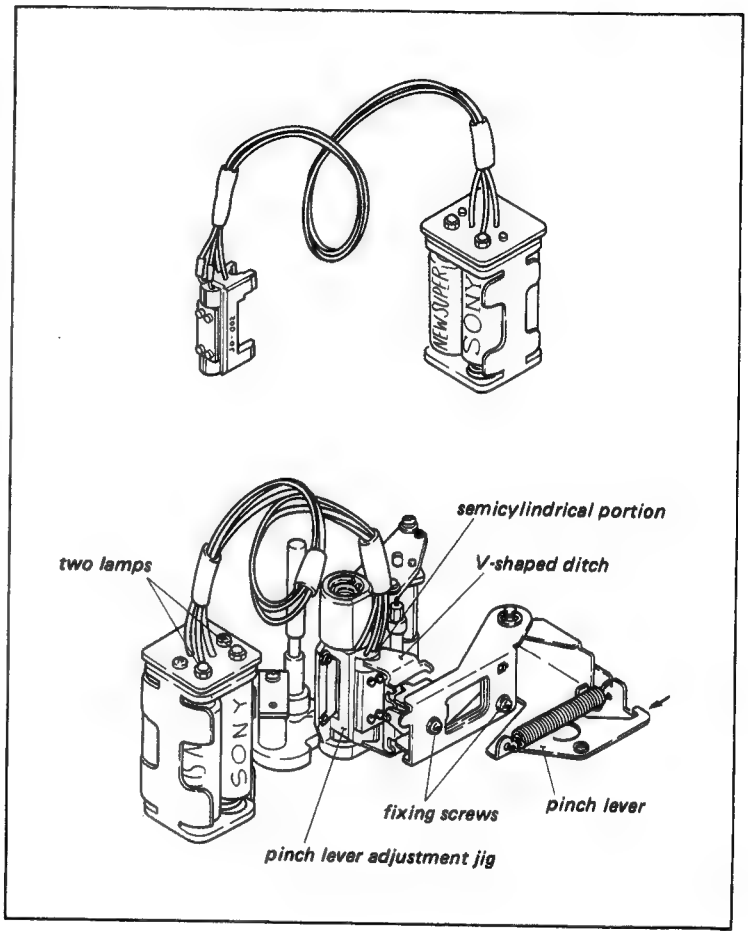
This adjustment is precisely factory-calibrated before shipment so that no adjustment is required except the pinch lever and the capstan shaft replacement.

Tool : Pinch lever adjustment jig
Mode : EJECT completion
Check procedure:

(1) Install the pinch lever adjustment jig taking care not to give scar on the capstan.
(2) Push the pinch lever until V-shaped ditch of the pinch lever contacts the semicylindrical portion of the jig lightly. Check that the two lamps of the jig light at the same time.

Adjustment procedure:

(1) Loosen the two fixing screws of the pinch lever and adjust the V-shaped ditch to the correct position.
(2) After this adjustment, tighten the fixing screws and check again.



SECTION 6
BACK TENSION AND TORQUE ALIGNMENT

6-1. BRAKE SYSTEM ADJUSTMENT

6-1-1. S Brake Torque Adjustment

Tool and equipment:

Reel table torque measurement tape (100 mm dia.)
Tension scale (200 g full scale).

Mode: EJECT completion/POWER off.

Check procedure:

(1) Grasp the top of the supply reel table with finger. Check that the clearance between the brake arm and the lining holder meets the required specification (1) as shown in figure as it is turned clockwise direction approx. 30 degrees.

(2) Install the jig tape on the supply reel table and hook a tension scale on an end of the jig tape. Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the arrow direction. Check that the scale reading meets the required specification (2).

Adjustment procedure:

For spec. 1

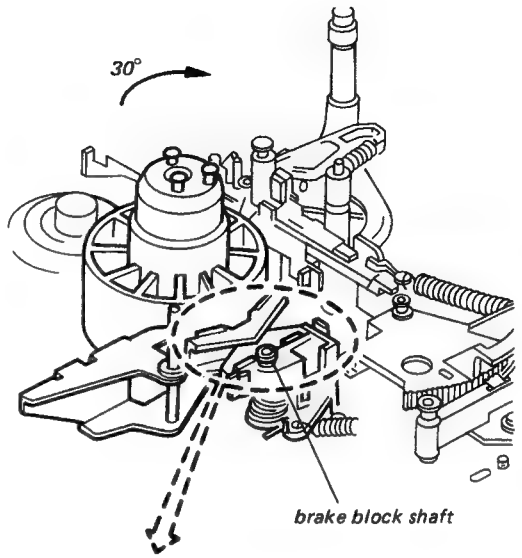
(1) Bend the brake block shaft toward the reel table or the opposite direction with finger.

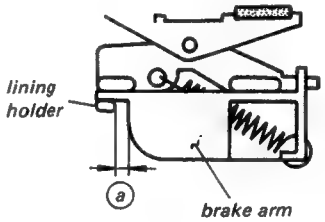
For spec. 2

(2) Clean the surface of the reel table with cloth moistened with cleaning fluid.

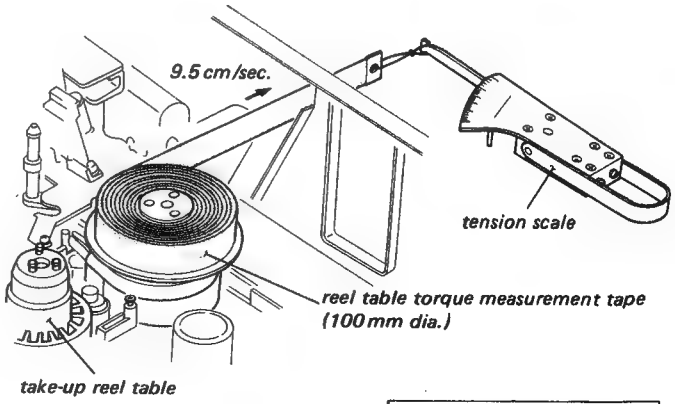
(3) If the scale reading does not meet the specification (2), replace the lining holder and check again.

(4) If not in step (2), replace the reel table and check again.





Spec. 1:
0.6 mm ≦ ⓐ ≦ 1.0 mm



Spec. 2:
100 g ~ 170 g (on scale)
(500 g.cm ~ 850 g.cm)

6-1-2. T Brake Torque Adjustment

Tool and equipment:

Reel table torque measurement tape (100 mm dia.)
Tension scale (200 g full scale).

Mode: EJECT completion/POWER off.

Check procedure:

(1) Grasp the top of the take-up reel table with finger. Check that the clearance between the brake arm and the lining holder meets the required specification (1) as shown in figure as it is turned clockwise direction approx. 30 degrees.

(2) Install the jig tape on the take-up reel table and hook a tension scale on an end of the jig tape. While pushing the T tension regulator arm to the left as far as it will go, pull out the tape at the constant speed of approx. 9.5 cm/sec. in the arrow direction. Check that the scale reading meets the required specification (2).

Adjustment procedure:

For spec. 1

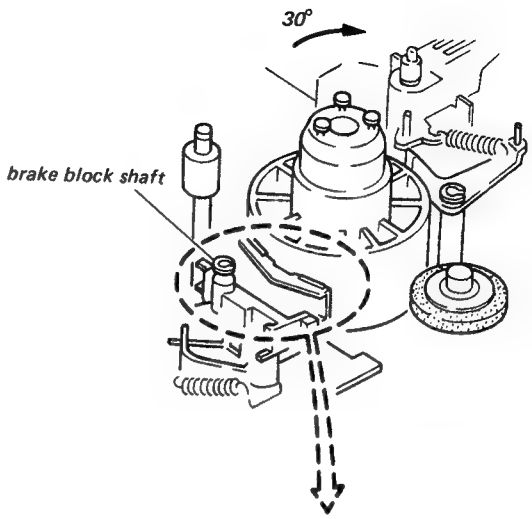
(1) Bend the brake block shaft toward the reel table or the opposite direction with finger.

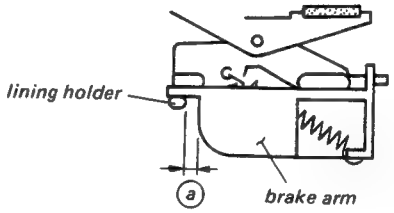
For spec. 2

(2) Clean the surface of the reel table with cloth moistened with cleaning fluid.

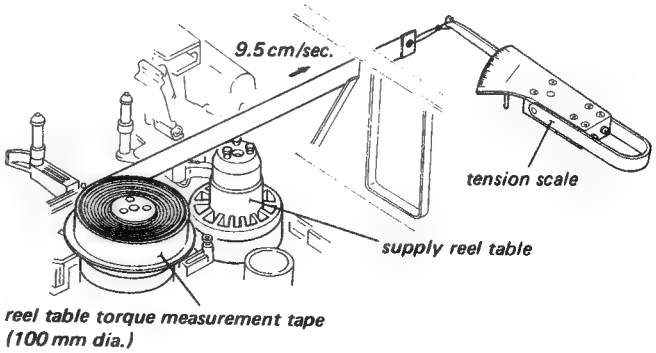
(3) If the scale reading does not meet the specification (2), replace the lining holder and check again.

(4) If not in step (2), replace the reel table and check again.





Spec. 1:
0.6 mm ≦ ⓐ ≦ 1.0 mm



Spec. 2:
100 g ~ 170 g (on scale)
(500 g.cm ~ 850 g.cm)

6-1-3. REW Brake Torque Adjustment

Tool and equipment:

Reel table torque measurement tape (100 mm dia.)
Tension scale (50 g full scale)

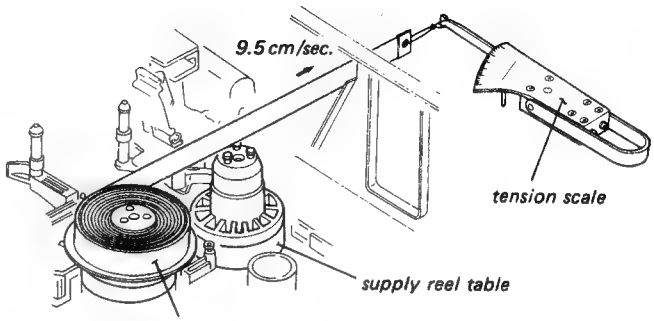
Mode: REW

Check procedure:

(1) Install the jig tape on the take-up reel table and hook a tension scale on an end of the jig tape.
(2) Put the machine into the REW mode. Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the arrow direction. Check that the scale reading meets the required specification.

Adjustment procedure:

(1) If the scale reading does not meet the specification, replace the R brake ass'y and check again.
(2) If not in step (1), replace the reel table and check again.



Spec.:
18 g ~ 36 g (on scale)
(90 g.cm ~ 180 g.cm)

6-2. FF/REW TORQUE ADJUSTMENT

- It is required that the sec. 5-8-3 T idler solenoid position adj. and sec. 5-8-4 S idler solenoid position adj. are checked to be correct or properly adjusted before initiating this adjustment.

Tool and equipment:

Reel table torque measurement tape (100 mm dia.)
Tension scale (500 g full scale).

Mode: FF and REW

Check procedure:

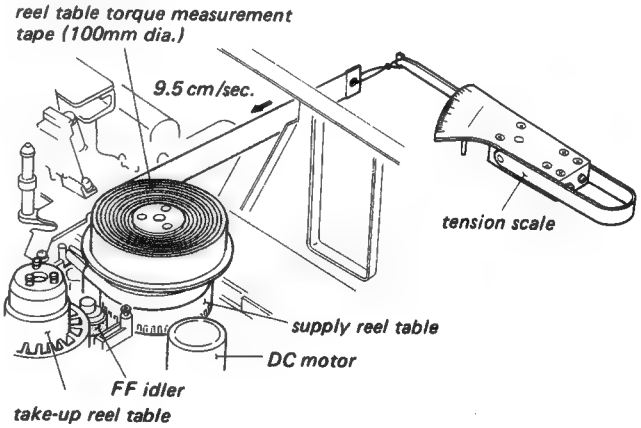
FF torque

(1) Install the jig tape on the take-up reel table and hook a tension scale on an end of the tape. Pull out the tape.
(2) Put the machine into FF mode. Let the tape pulled at the constant speed of approx. 9.5 cm/sec. check that the scale reading meets the required specification.

REW torque

(3) Install the jig tape on the supply reel table and hook a tension scale on an end of the tape. Pull out the tape.
(4) Put the machine into the REW mode. Let the tape pulled at the constant speed of approx. 9.5 cm/sec. Check that the scale reading meets the required specification.

< REW torque measurement method >



Spec.:
higher than 300 g (on scale)
(higher than 1500 g.cm)

Adjustment procedure:

Both FF torque and REW torque are adjusted by the following adjustment procedures.

(1) Clean the surface of the reel table, FF idler and belt with cloth moistened with cleaning fluid. Check the torque again.

(2) If not in step (1), put the machine into FF or REW mode without cassette and check that the dc voltage at the terminals of dc motor is 10.5 V ± 1.5 V in the FF or REW mode. If the dc voltage is out of spec., check that the circuit operation of MR board operates correctly.

(3) If not in steps (1) and (2), replace the reel table, FF idler and belt.

6-3. FWD TORQUE ADJUSTMENT

Mode: FWD/FWD search

Check procedure:

(1) Install the KCS-20 cassette tape at the tape end portion.

(2) Put the machine into the FWD mode. Check that the relationship between the T tension regulator arm and cassette tape meets the required specification.

(3) Install the KCA-60 cassette tape at the tape end portion.

(4) Put the machine into ×5 FWD search mode.

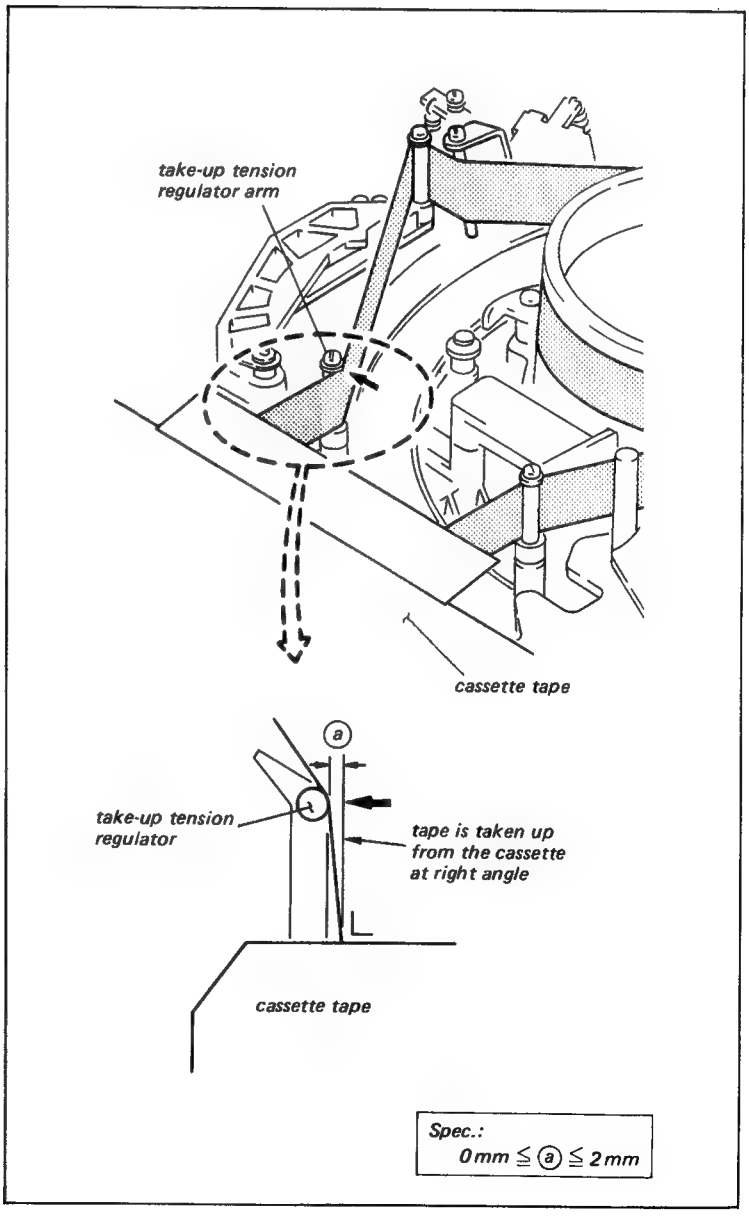
(5) Check that the tape runs without slack around the T tension regulator arm.

(6) Push the T tension regulator arm to the left as far as it will go, check that the tape slack is occurred around the T tension regulator arm.

Adjustment procedure:

(1) Adjust RV-1 on MR-6 or MR-11 board meets the required specification in FWD mode.

(2) Confirm as check procedures (3) ~ (6).



6-4. REV TORQUE ADJUSTMENT

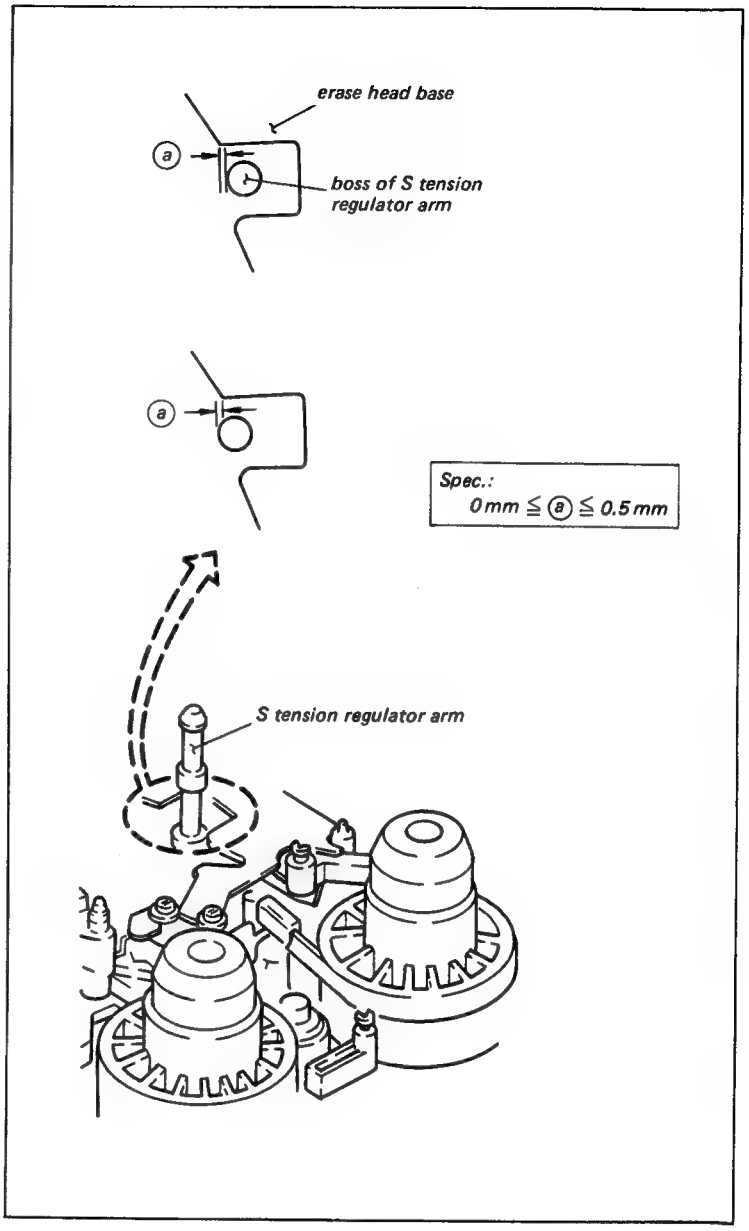
Mode: REV (about x1) mode

Check procedure:

(1) Install the KCS-20 cassette tape at the tape top portion.
(2) Put the machine into REV mode.
(3) Check that the relationship between the boss of S tension regulator and the bracket of erase head base meets the required specification.

Adjustment procedure:

(1) Adjust RV-2 on MR-6 or MR-11 board meets the required specification.



6-5. FF BACK TENSION ADJUSTMENT

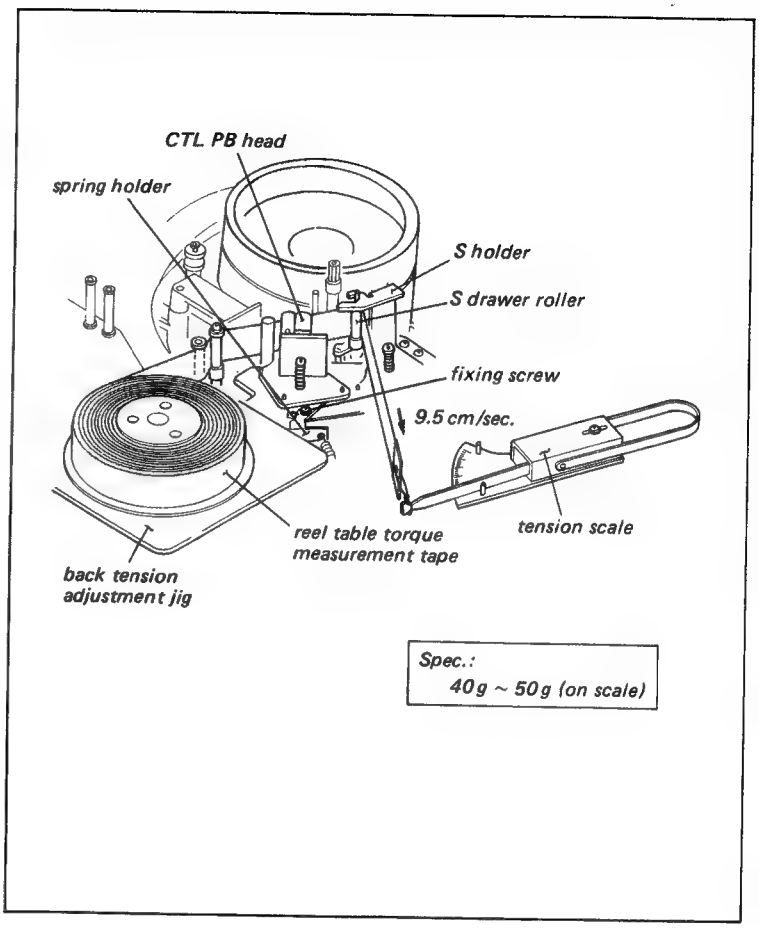
- It is required that the sec. 5-6-3 supply tension regulator operating position adj. is checked to be correct or properly adjusted before initiating this adjustment.
- It is required that the sec. 6-6 FWD back tension adj. is performed after this adjustment.

Tool and equipment:

Back tension adjustment jig.
Reel table torque measurement tape (100 mm dia.)
Tension scale (50 g full scale)

Preparation:

(1) Turn POWER on in FR-STOP mode. (When POWER on, the S drawer roller moves to the FR-STOP position and put the machine into FR-STOP mode automatically.)
(2) Turn the pulley of gear box block in the clockwise direction viewing from the front panel with finger so that the S drawer roller places in front of the CTL PB head.
(3) Install the back tension adjustment jig.
(4) Install the jig tape on the supply reel table and thread the tape as shown in figure. Check that the tape does not curl at the flange of S drawer roller.
(5) Turn the pulley in opposite direction in step 2) so that the S drawer roller is engaged with the S holder.
(6) Hook a tension scale on an end of tape.



Check procedure:

(1) Press the FF button and put into FF mode.
(2) Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the arrow direction.
Check that the scale reading meets the required specification.

Adjustment procedure:

(1) Adjust the position of the spring holder meets the required specification with flat blade screwdriver, 3 mm dia.
(2) Check that the scale reading meets the required specification once refer to the check procedure.
(3) Perform sec. 6-6 FWD back tension adjustment.

6-6. FWD BACK TENSION ADJUSTMENT

- It is required that the sec. 5-6-3 supply tension regulator operating position adj. and sec. 6-5 FF back tension adj. are checked to be correct or properly adjusted before initiating this adjustment.

Tool and equipment:

Back tension adjustment jig.
Reel table torque measurement tape (100 mm dia.)
Tension scale (100 g full scale)

Preparation:

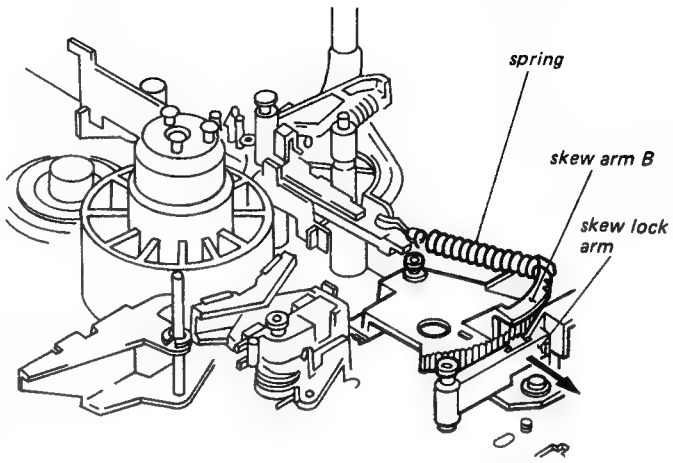
(1) Push the skew arm in the arrow direction.
(2) Turn on the POWER and put the machine into the FR-STOP mode. (When turn on the POWER, the S drawer roller moves to the FR-STOP position and put the machine into the FR-STOP mode automatically.)
(3) Turn the pulley of gear box block in the clockwise direction viewing from the front panel with finger so that the S drawer roller places in front of the CTL PB head.
(4) Install the back tension adjustment jig.
(5) Install the jig tape on the supply reel table and thread the tape as shown in figure.
Check that the tape does not curl at the flange on S drawer roller.
(6) Turn the pulley in opposite direction in step (3) so that the S drawer roller is engaged with the S holder.
(7) Hook a tension scale on an end of tape.

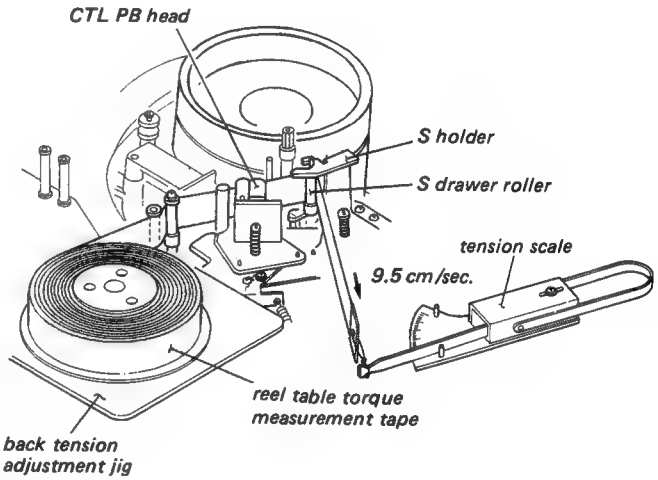
Check procedure:

(1) Press the PLAY button and put into PLAY mode.
(2) Pull out the tape at the constant speed of approx. 9.5 cm/sec. in the arrow direction.
Check that the scale reading meets the required specification.

Adjustment procedure:

(1) Select the proper spring hook of the skew arm B so that the scale reading meets the required specification.
(2) After this adjustment, check again refer to check procedure.





Spec.:
70 g ~ 75 g (on scale)

SECTION 7
TAPE RUN ALIGNMENT

7-1. FF/REW MODES TAPE PATH ADJUSTMENT

Mode: FF and REW

Check procedure:

(1) **Install KCA-60 cassette tape (use the middle portion of the tape). Put the machine into REW mode.**
(2) Observe the surface of the running tape very carefully around T drawer arm. Check that the tape tension is exactly equal at the tape top and tape bottom. (Spec. 1)
(3) Check that the tape runs without curl at the upper or lower flange of S drawer roller in the REW mode. (Spec. 2)
(4) Put the machine once into the STOP mode, and put into the REW mode. Check that the tape runs without curl at the S drawer roller in the moment of just after the REW mode. (Spec. 3)
(5) Put the machine into FF mode. Check that the tape runs without curl at the S drawer roller and T drawer arm in the moment of just after the FF mode. (Spec. 4)
(6) Put the machine into FWD mode. Check that the top of the correct guide pin does not contact with the tape and drum. (Spec. 5)

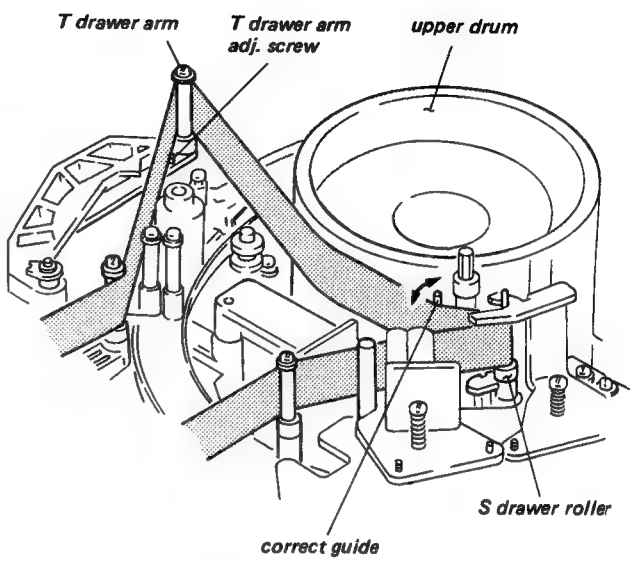
Adjustment procedure:

Spec. 1
(1) Adjust the slantness of T drawer arm by turning the T drawer arm adjusting screw.

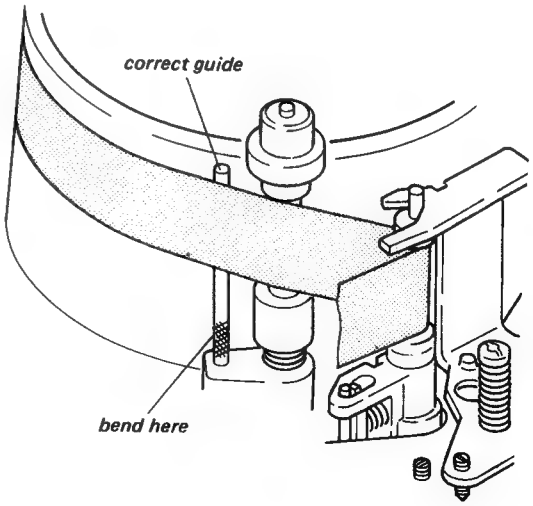
Spec. 2
(2) Bend the bottom of the correct guide with pliers in the arrow direction.

Spec. 3
(3) Fine bend the bottom of the correct guide with pliers to satisfies the spec. 2) and 3).

Spec. 4
(4) Fine adjust the slantness of the T drawer arm by turning the T drawer arm adjusting screw to satisfies the spec. 1) and 4).



Spec. 1.



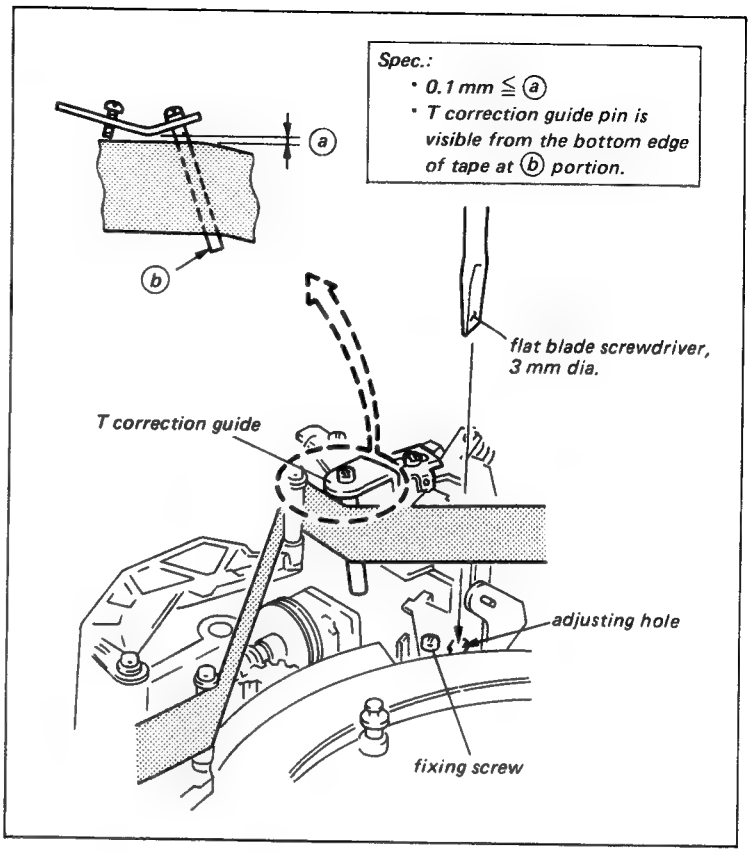
7-2. T CORRECTION GUIDE SLANTNESS ADJUSTMENT

Check procedure:

(1) Install KCA-60 cassette tape, and put the machine into the FR-STOP mode.
(2) Press the PLAY button. The threading operation starts. Turn off the POWER when the pinch roller is pathed in front of the T correction guide.
(3) Check that the clearance between the tape top edge and the upper bracket of T correction guide meets the required specification.

Adjustment procedure:

(1) Adjust the position of T correction guide with flat blade screwdriver 3 mm dia. meets the required specification.
(2) After this adjustment, perform sec. 7-3 FWD mode tape path adjustment (1).



7-3. FWD MODE TAPE PATH ADJUSTMENT (1)

- It is required that the sec. 7-2 T correction guide slantness adj. and sec. 7-1 FF/REW modes tape path adj. are checked to be correct or properly adjusted before initiating this adjustment.

Mode: FWD

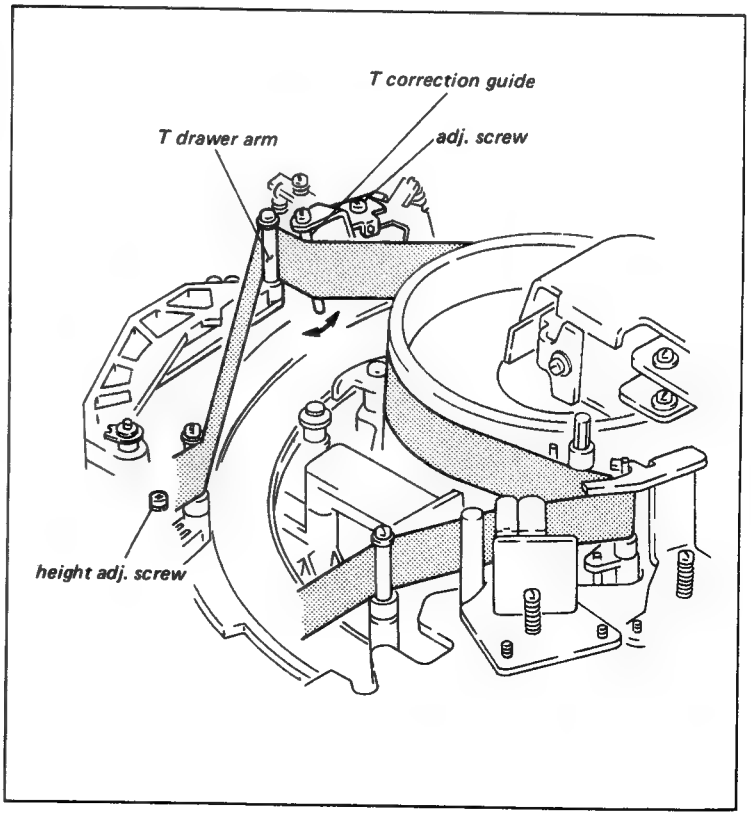
Check procedure:

(1) Install KCA-60 cassette tape (after the KCA-60 tape has run after 30 minutes). Put the machine into FWD mode.
(2) Check that the tape runs without curl at the upper or lower flange of T drawer arm. (Spec. 1)
(3) Check that the tape tension is exactly equal at the tape top and tape bottom, and the tape runs without curl at the lower flange of T drawer arm. (Spec. 2)

Adjustment procedure:

Spec. 1
(1) Adjust the height of T drawer arm by turning the T drawer arm height adjusting screw.

Spec. 2
(2) Adjust the T correction guide in the arrow direction by adjusting screw.



7-4. FWD MODE TAPE PATH ADJUSTMENT (2)

Mode: FWD

Check procedure:

(1) **Install KCA-60 cassette tape (use the middle portion of the tape).** Put the machine into FWD mode.
(2) Check to see carefully two positions indicated by the ※ mark in figure, check that the tape tension is exactly equal at the tape top and tape bottom. (Spec. 1)
(3) Check that the clearance between the lower flange of threading roller and the tape bottom edge meets the required specification (2).

Adjustment procedure:

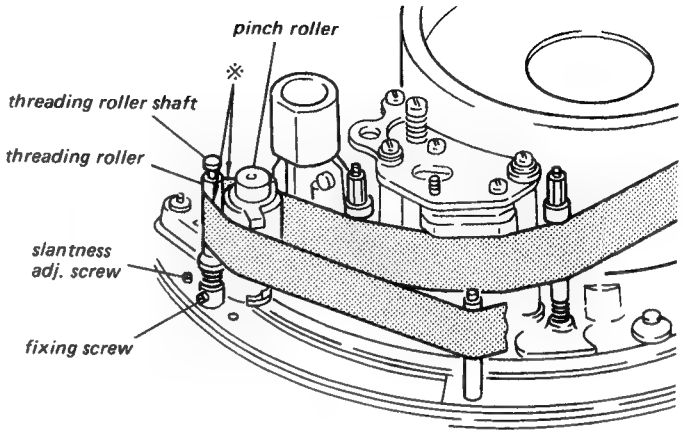
(1) Loosen the fixing screw in the bottom of the threading roller as shown in figure.

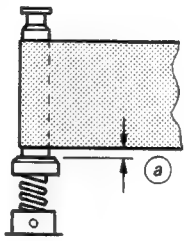
Spec. 1

(2) Adjust the slantness of the threading roller by turning the slantness adjusting screw.

Spec. 2

(3) Adjust the height of the threading roller by turning the threading roller shaft.
(4) Check again that the slantness and height meets the required specification 1) and 2).





Spec. 2:
0.01 mm ≦ ⓐ ≦ 0.15 mm

7-5. REV MODE TAPE PATH ADJUSTMENT

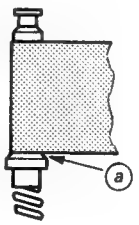
Check procedure:

(1) **Install KCA-60 cassette tape (use the middle portion of the tape). Put the machine into FWD mode.**
(2) Put the machine into REV (x5) mode. Check that the tape runs in contact with the lower flange of the threading roller without curl.
(3) Put the machine into FWD (x5) mode. Check that the clearance between the lower flange of the threading roller and the tape bottom edge meets the required specification and the tape does not curl at the lower or upper flange of TG-IV.

Adjustment procedure:

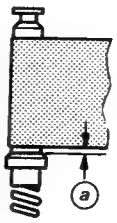
(1) Fine adjust the height of the threading roller by turning the threading roller shaft.
(2) After this adjustment, perform sec. 7-4 FWD mode tape path adjustment (2).

< REV (x5) >



Spec.:
The tape runs in contact with ⓐ portion without curl.

< FWD (x5) >

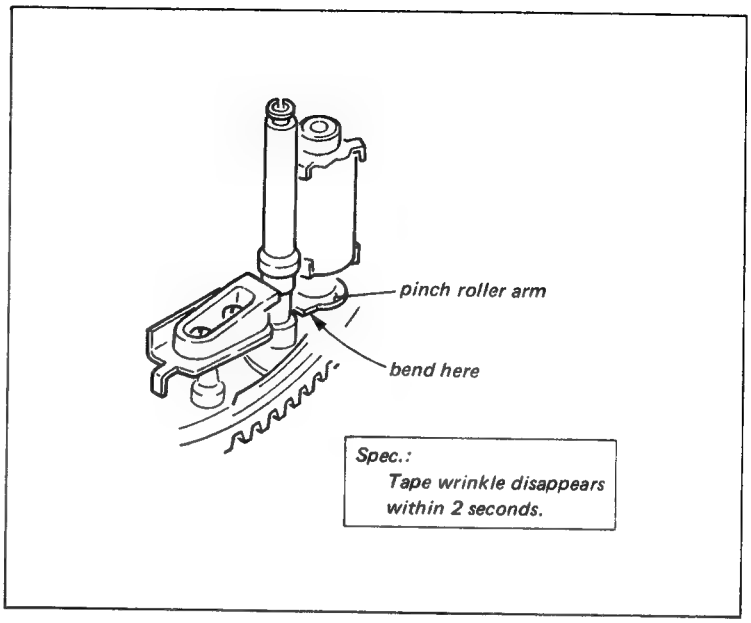


Spec.:
0.01 mm ≦ ⓐ ≦ 0.15 mm

7-6. TAPE PATH ADJUSTMENT AROUND PINCH ROLLER

7-6-1. Tape Wrinkle Remove Adjustment

- The first priority of this adjustment is to remove the tape wrinkle around the pinch roller, happening in the moment of just after the pinch roller pressing against the capstan.
- If the tape wrinkle is generated, perform sec. 7-6-2 pinch roller slantness adjustment at first. After this adjustment performed, fine adjust this adjustment once again.



Check procedure:

(1) Install KCA-60 cassette tape at the tape top portion.

(2) Put the machine into FWD (x1) mode, REV (x5) mode, repeat REV (x5) and FWD (x5) mode, PAUSE ON/OFF mode in the REC mode, and PAUSE ON/OFF mode in the playback mode. Check that the tape wrinkle does not appear or disappear within specified time when the tape runs toward the specified direction in these modes.

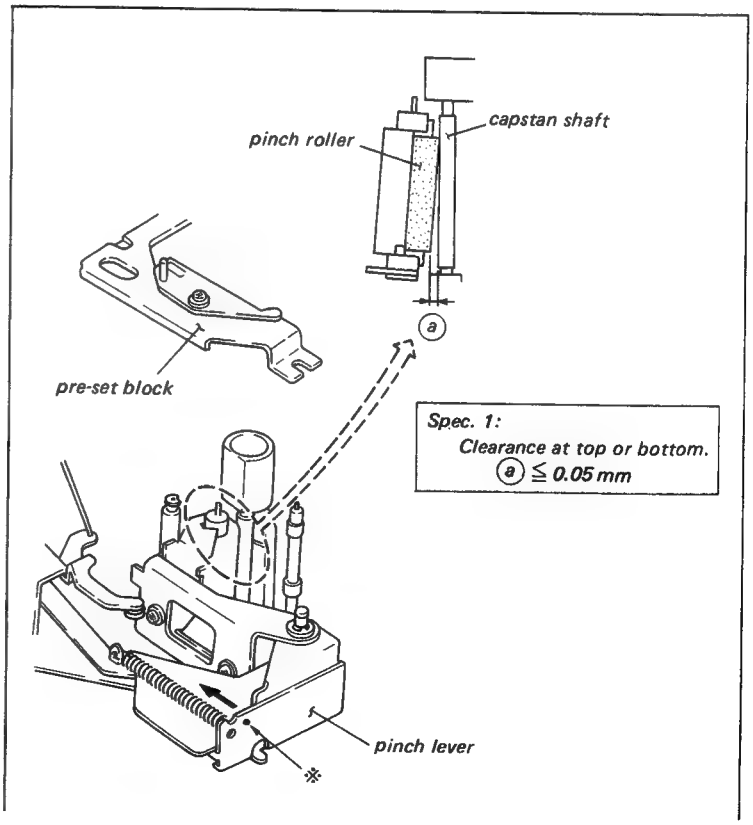
Adjustment procedure:

(1) Perform sec. 7-6-2 pinch roller slantness adjustment.

(2) Check the tape wrinkle refer to check procedure. If not, bend the pinch roller arm.

7-6-2. Pinch Roller Slantness Adjustment

Mode: Threading completion mode without cassette tape.



Check procedure:

(1) Remove the pinch roller pre-set bracket.

(2) Put the machine into the threading completion mode without cassette tape. Turn POWER off.

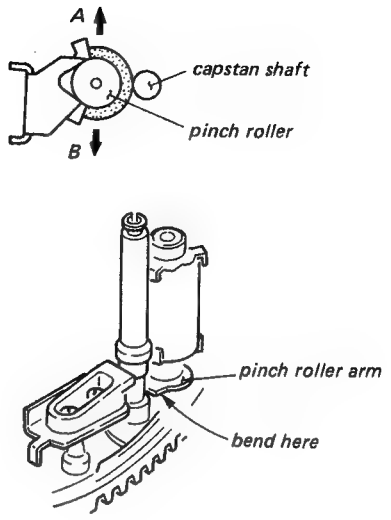
(3) Push lightly the ※ marked portion of the pinch lever in the arrow direction with finger.

(4) When the upper or lower section of the pinch roller came into contact with the capstan shaft. Check that the clearance between the lower or upper section of the pinch roller and the capstan shaft meets the required specification (1).

(5) Push lightly the ※ marked portion of the pinch lever in the arrow direction with finger.
Just before the pinch roller comes into contact with the capstan shaft, check that the upper section of the pinch roller does not move in the "A" direction nor "B" direction as observed by eye, visually. (Spec. 2)

Adjustment procedure:

(1) Turn POWER on. The threading ring put into the unthreading operation. Turn POWER off in the moment when the pinch roller comes in front of the audio/CTL head.
(2) Bend the pinch roller arm.
(3) Check that the pinch roller slantness meets the required specification referring to check procedure. If not, repeat the foregoing step 2) until the specification 1) and 2) are met.
(4) Install the pinch roller pre-set bracket, and perform sec. 5-4-2 pinch roller pre-set adj.



7-7. 10 TIMES PICTURE SEARCH · TAPE PATH ADJUSTMENT

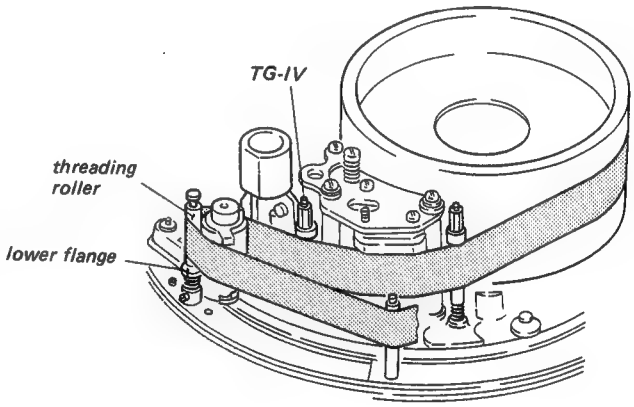
Mode: −10 times picture search
(This mode is set up by using RM-440. If RM-440 is not available, refer to sec. 2-8.)

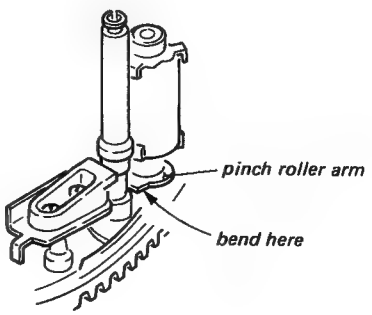
Check procedure:

(1) Install KCA-60 cassette tape (after the KCA-60 tape has run after 30 minutes).
(2) Put the machine into −10 times picture search mode.
(3) Check that the tape runs in contact with the lower flange of the threading roller without curl and the tape does not curl at the lower and upper flanges of TG-IV.

Adjustment procedure:

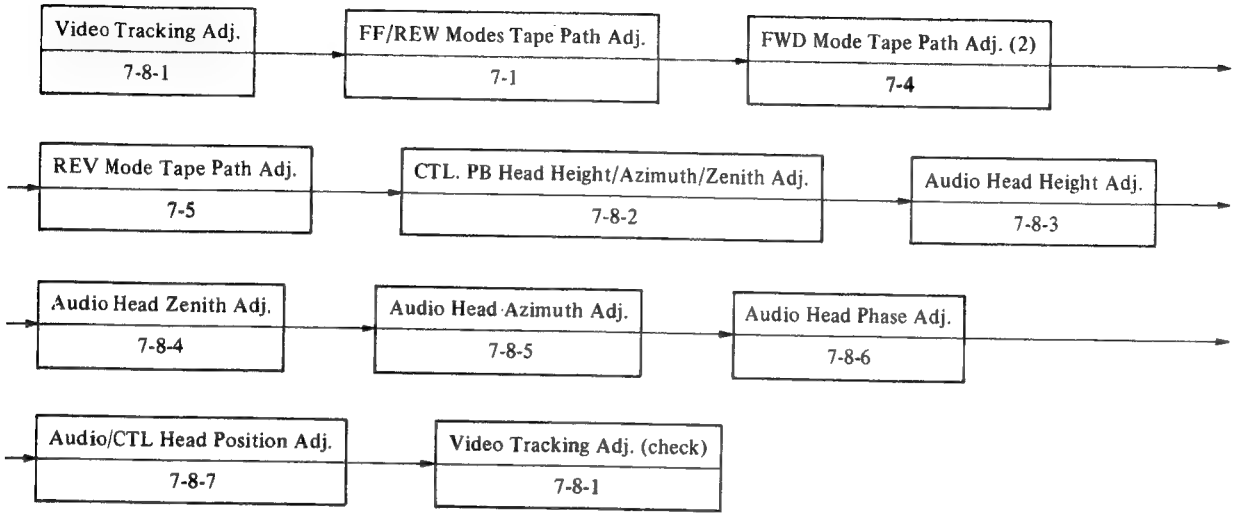
(1) Bend the pinch roller arm.





7-8. TRACKING ADJUSTMENT

The tracking adjustment is required to be performed as following steps.



7-8-1. Video Tracking Adjustment

Tool and equipment:

Alignment tape, RR5-2SC-PAL
Flatness plate
Oscilloscope

Preparation:

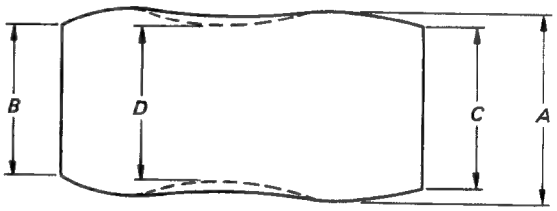
(1) Connect the oscilloscope to TP18/RP-8 board, and EXT.TRIG. from TP14/RP-8 board.
(2) Play back the color-bar segment of alignment tape.

Check procedure:

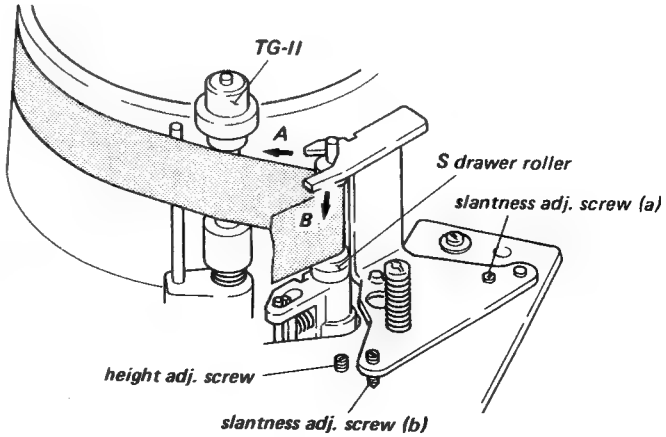
(1) While observing the waveform on the scope, turn the TRACKING control in both directions noting that the RF waveform maintains a flat envelope while the amplitude increases and decreases.
(2) Adjust the TRACKING control so that the RF envelope is just before starting to decrease.
Check that the RF envelope fluctuation and head-to-tape contact are within the specification.

Adjustment procedure:

- When the video tracking adjustment is performed, the drum entrance side tape guide's height adjustment is usually not required. But when this guide (TG-II) is replaced or removed, adjust the height of this guide so that the tape runs at the center of this guide without tape runs in contact with upper or lower flange.



Spec.:
< head to tape contact >
$\frac{B}{A} \geqq 0.70$ $\frac{C}{A} \geqq 0.70$
< fluctuation >
$\frac{D}{A} \geqq 0.90$



TAPE RUN

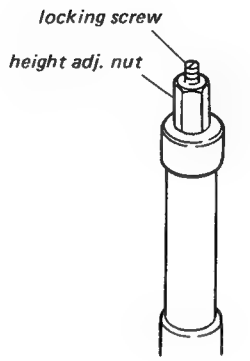
- S drawer roller unit has three adjusting screws. These three adjusting screws functions as follows.
  (i) Slantness adjusting screw (a)
  Turning this screw in the clockwise direction, the upper section of S drawer roller slants in the arrow "A" direction.
  (ii) Slantness adjusting screw (b)
  Turning this screw in the counter clockwise direction, the upper section of S drawer roller slants in the arrow "B" direction.
  The RF envelope meets the required specification but tape runs curl at upper flange of S drawer roller, this screw is only used in this manner to remove tape curl.
  (iii) Height adjusting screw
  Turning this screw in the clockwise direction, makes the height of S drawer roller lower.
- When the drum exit side tape guides (TG-III, TG-IV) adjustment are performed, loosen the locking screw 1 ~ 2 turns and adjust the height by turning the height adjusting nut.
- When the tracking at the drum's input side is no good.
  (1) Set the TRACKING control so that the RF envelope amplitude is made to 70 ~ 80% of the maximum amplitude.
  (2) Adjust height and slantness of S drawer roller by turning the height adjusting screw and slantness adjusting screw (a) so that the RF envelope is flat.

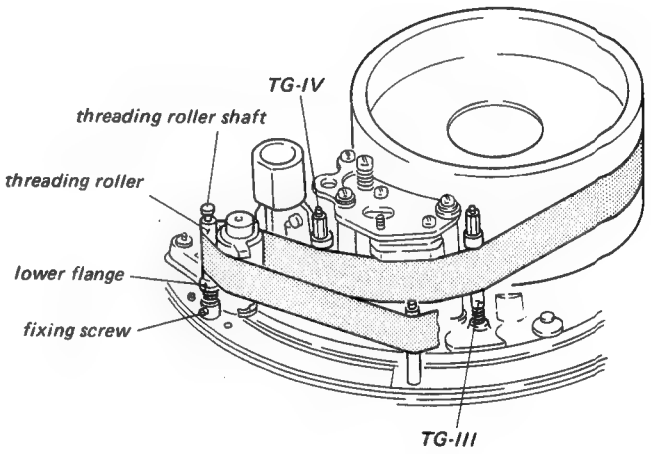
(CAUTION)

  (i) Observe the surface of the running tape very carefully around S drawer roller. Check that the tape tension is exactly equal at the tape top and tape bottom.
  (ii) Check that the tape runs in contact with the upper flange of S drawer roller without tape curl.

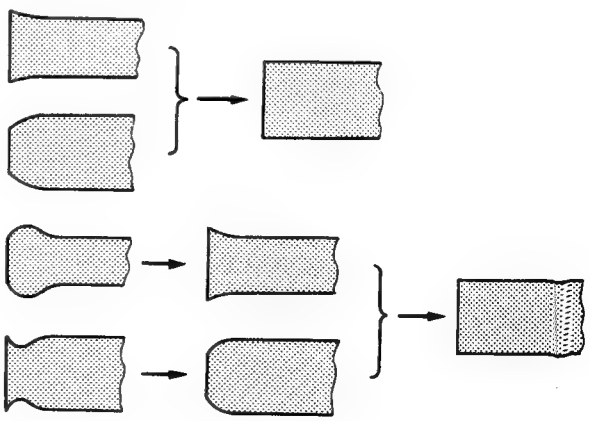
- When the tracking at the drum's center portion is no good. It is required that the drum's input side tracking adjustment to be correctly adjusted before initiating this adjustment.
  (3) Set the TRACKING control so that the RF envelope amplitude is made to 70 ~ 80% of the maximum amplitude.
  (4) Adjust height and slantness of S drawer roller by turning the height adjusting screw and slantness adjusting screw (a) so that the RF envelope is flat.

(TG-III / TG-IV)





< drum entrance side >



(CAUTION)

(i) Adjust the slantness adjusting screw (a) in the clockwise within 10 degrees.

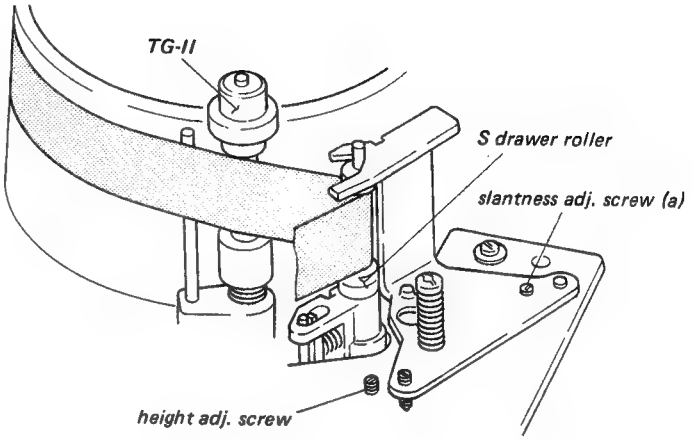
(ii) When the drum's center portion tracking adjustment performs, the drum's input side tracking must maintain to flat.

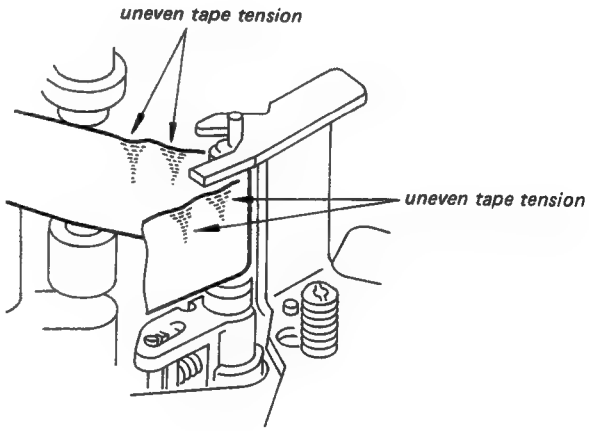
(iii) Check that the tape runs in contact with the upper flange of S drawer roller without tape curl.

(5) When the RF envelope is not flat with step 4), adjust height of TG-III and TG-IV.

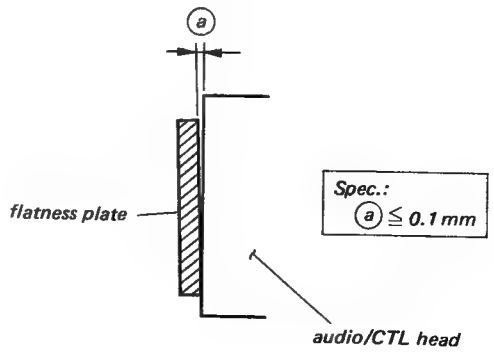
(6) When the RF envelope is not flat with steps 4) and 5), adjust zenith of the audio/CTL head within the allowable range. Adjust height of TG-III and TG-IV once again.

(7) Check that the clearance between the tape bottom edge and the lower flange of threading roller is 0.01 mm ~ 0.15 mm clearance. If not, perform height adjustment of threading roller by turning the threading roller shaft.





< zenith adj. for audio/CTL head >



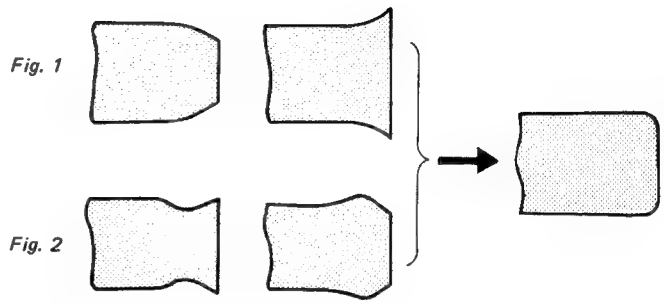
- When the tracking at the drum's exit side is no good.

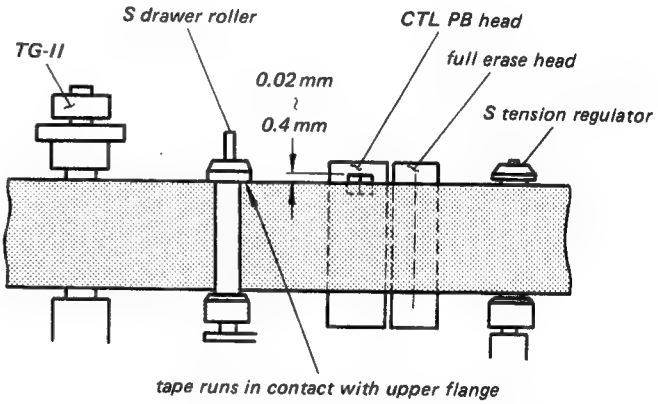
(8) Set the TRACKING control so that the RF envelope amplitude is made to 70 ~ 80% of the maximum amplitude.

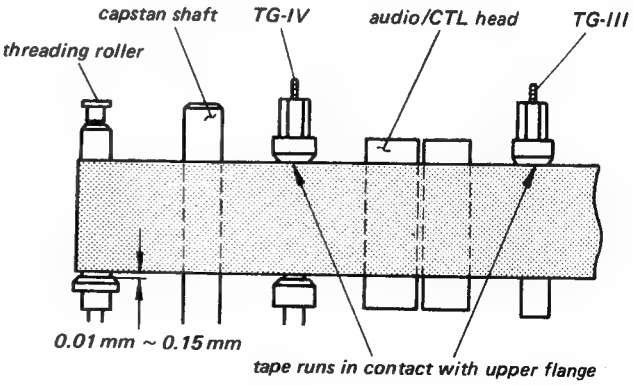
(9) When the RF envelope is not flat as shown in figure 1, adjust height of TG-IV so that the RF envelope is flat. After this adjustment, adjust height of TG-III so that the tape runs in contact with upper flange. When the RF envelope is not flat as shown in figure 2, adjust height of TG-III and TG-IV so that the RF envelope is flat. If it does not with this adjustment, adjust the zenith of the audio/CTL head within the allowable range. Adjust the height of TG-III and TG-IV.

(10) Check that the clearance between the tape bottom edge and the lower flange of threading roller is 0.01 mm ~ 0.15 mm clearance. If not, perform height adjustment of threading roller by turning the threading roller shaft.

< drum exit side >







7-8-2. CTL PB Head Height/Azimuth/Zenith Adjustments

- CTL PB head height, azimuth, and zenith adjustments are closely related. If any one of these three adjustments is attempted, perform the rest of two adjustments at the same time.

Tool and equipment:

Flatness plate

Check procedure:

(1) Check that at the top and bottom clearances between erase head and TG-I meets the required specification. (Spec. 2: Azimuth check)

(2) Check that the clearance between the erase head and flatness plate meets the required specification, when the flatness plate set on the erase head and TG-I. (Spec. 3: Zenith check)

(3) Install a cassette tape, and put the machine into FWD mode.

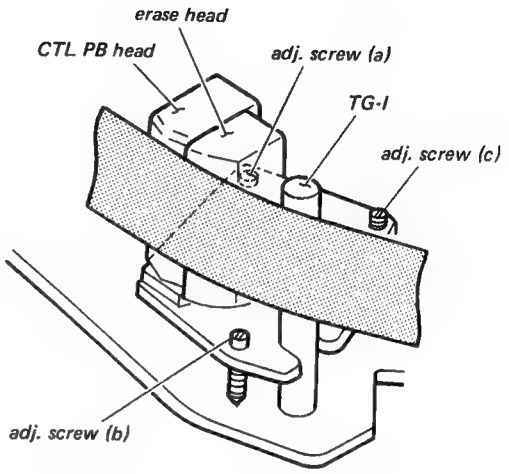
(4) Check that the relationship between the top edge of tape and CTL PB head meets the required specification. (Spec. 1: Height check)

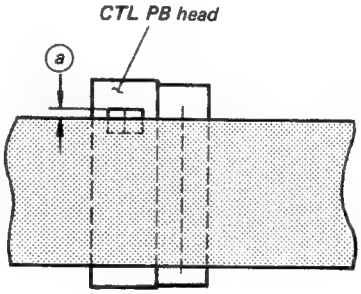
Adjustment procedure:

(1) Adjust the adjusting screw (a) meets the required specification (2).

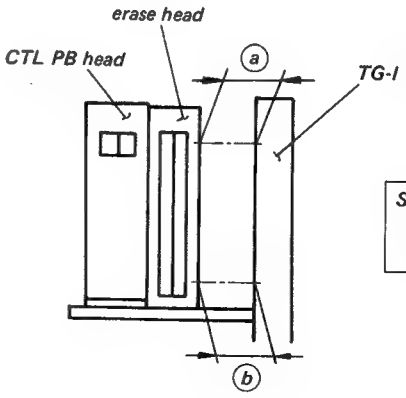
(2) Adjust the adjusting screw (b) meets the required specification (3).

(3) Turn three adjusting screws of exactly equal amount in clockwise or counterclockwise direction so that the relationship between tape and head meets the required specification (1).

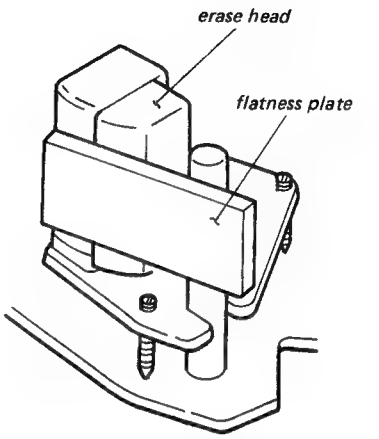


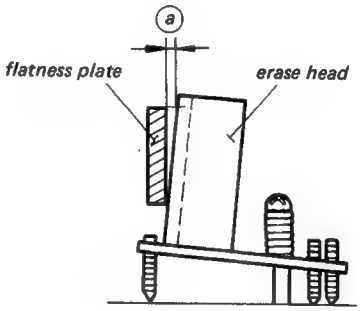


Spec.:
(height)
0.02 mm ≦ ⓐ ≦ 0.4 mm

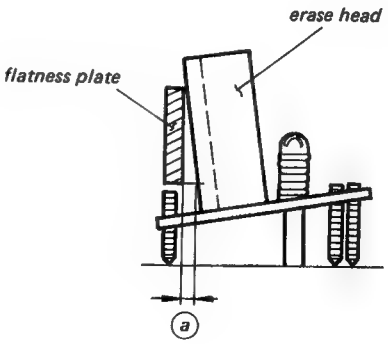


Spec.:
(azimuth)
ⓐ ≒ ⓑ





Spec.:
(Zenith)
ⓐ ≦ 0.1 mm



7-8-3. Audio Head Height Adjustment

Tool and equipment:

Alignment tape, RR5-2SC-PAL
VTVM or oscilloscope

Preparation:

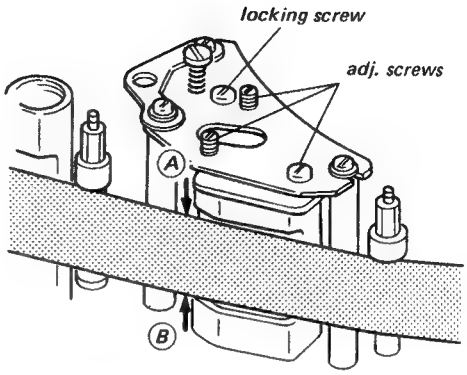
(1) Connect the VTVM or oscilloscope to AUDIO OUT CH-1 and CH-2 terminals.
(2) Playback the audio 1 kHz segment of the alignment tape.

Check procedure:

(1) Check that the CH-1 output level increase is less than 0.5 dB when pressing down at Ⓐ.
If not, perform the steps (1) and (2) of the adjustment procedure.
(2) Check that the CH-2 output level increase is less than 0.5 dB when pushing up at Ⓑ.
If not, perform the steps (3) and (4) of the adjustment procedure.

Adjustment procedure:

(1) Loosen the locking screw and turn adjusting screws (R) and (A) of exactly equal amount in counterclockwise direction and turn adjusting screw (C) of exactly equal amount in clockwise direction.
(2) Tighten the locking screw and check height again.
(3) Loosen the locking screw and turn adjusting screws (R) and (A) of exactly equal amount in clockwise direction and turn the screw (C) of exactly equal amount in counterclockwise direction.
(4) Tighten the locking screw and check height again.



Spec.:
- *CH-1 level increase is less than 0.5 dB when pressing down at Ⓐ portion.*
- *CH-2 level increase is less than 0.5 dB when pushing up Ⓑ portion.*

7-8-4. Audio Head Zenith Adjustment

Tool and equipment:

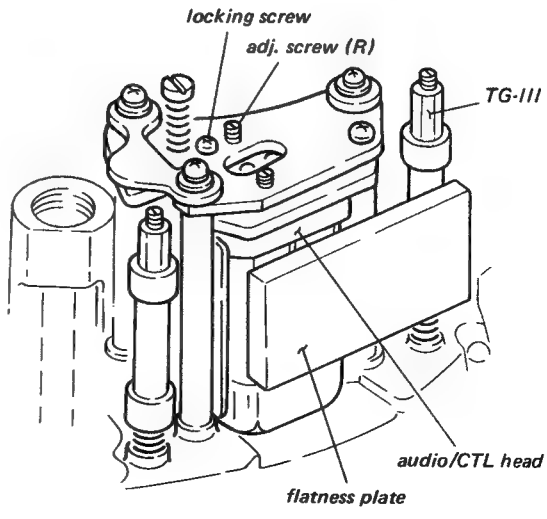
Flatness plate

Check procedure:

Check that the clearance between the audio head and the flatness plate meets the required specification, when the flatness plate is set on the audio head and TG-III.

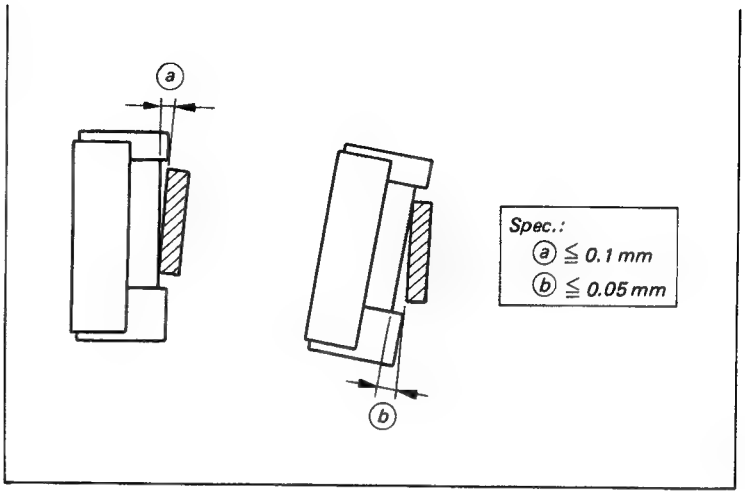
Adjustment procedure:

When the clearance is out of spec. at the top portion of the audio head.
(1) Turn the adjusting screw (R) in counterclockwise direction.
(2) Tighten the locking screw and check zenith again.



When the clearance is out of spec. at the bottom portion of the audio head.

(3) Loosen the locking screw ¼ ~ ½ turns.
(4) Turn the adjusting screw (R) in clockwise direction.
(5) Tighten the locking screw and check zenith again.



7-8-5. Audio Head Azimuth Adjustment

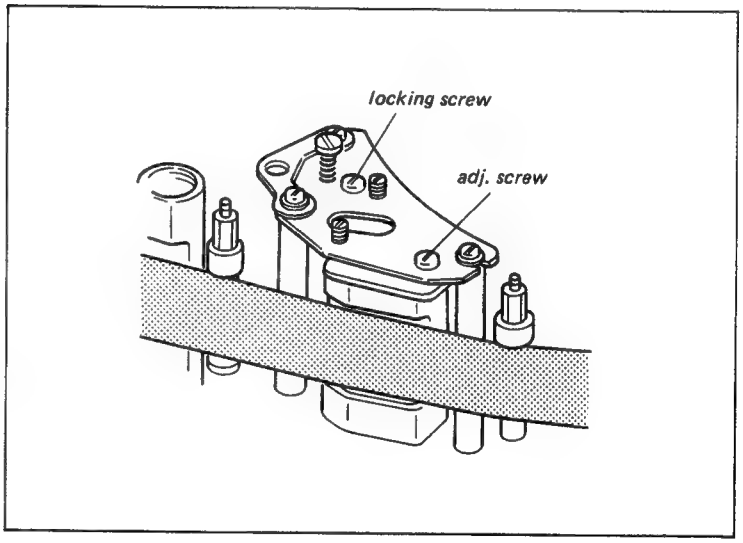
Tool and equipment:

Alignment tape, RR5-2SC-PAL
VTVM or oscilloscope

Preparation: (1) Connect the VTVM or oscilloscope to AUDIO OUT CH-1 or CH-2 terminal.
(2) Playback the audio 10 kHz portion of the alignment tape.

Adjustment procedure:

(1) Loosen the locking screw and adjust the maximum output level by turning the adjusting screw.
(2) Tighten the locking screw.



7-8-6. Audio Head Phase Adjustment

Tool and equipment:

Alignment tape, RR5-2SC-PAL
Oscilloscope

Preparation:

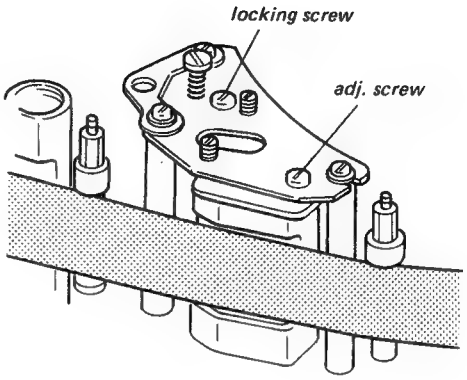
(1) Connect the horizontal and vertical terminals of the oscilloscope to AUDIO OUT CH-1 and CH-2 terminals.
(2) Playback the audio 1 kHz portion of the alignment tape.
(3) Adjust the scope for horizontal and vertical amplitudes of 6 cm of a lissajous waveshape.

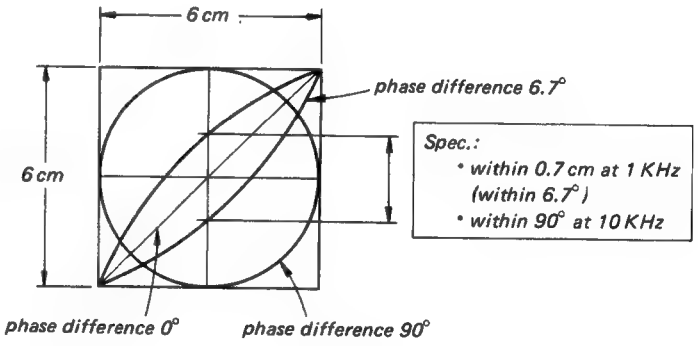
Check procedure:

Check that the vertical amplitude at the center in the horizontal direction is within the specification at 1 kHz and 10 kHz.

Adjustment procedure:

(1) Loosen the locking screw ¼ ~ ½ turns and adjust the phase by turning the adjusting screw.
(2) Tighten the locking screw and confirm phase again.





TAPE RUN

7-8-7. Audio/CTL Head Position Adjustment

- **The video head track width of this set is 105μm, but the recorded video track width on the alignment tape is 85μm. Therefore this CTL head position adjustment of this set is not perfect from the ordinary U-matic VTR's adjustment. Be sure to perform the following check/adjustment steps.**

Tool and equipment:

Alignment tape, RR5-2SC-PAL
Oscilloscope

Preparation:

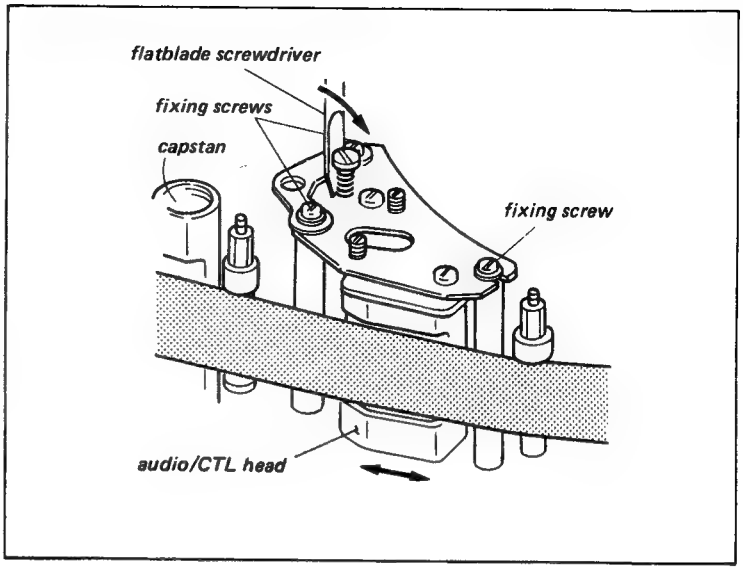
(1) Connect the oscilloscope to TP18/RP-8 board, TP2/SV-47 board, EXT.TRIG. from TP11/SV-47 board. board.
(2) Playback the color bar segment of the alignment tape.

Check procedure:

(1) Set the TRACKING control to its center click (detent) position.
(2) Turn the TRACKING control in counterclockwise direction until the waveform at TP18/RP-8 board is just before starting to decrease from the maximum amplitude, check that the waveform at TP2/SV-47 advances 1.2 ± 0.3 msec. from the step (1) position.
(3) Turn the TRACKING control in clockwise direction until the waveform at TP18/RP-8 board is just before starting to decrease from the maximum amplitude, check that the waveform at TP2/SV-47 is delayed. 1.2 ± 0.3 msec. from the step (1) position.

Adjustment procedure:

(1) Turn the TRACKING control in counterclockwise direction until the waveform at TP18/RP-8 advance 1.2 msec. from the step (1) position of check procedure.
(2) Loosen the three fixing screws.
(3) Move the CTL head block toward the capstan shaft as far as it will go, and install the flatblade screwdriver as shown in figure. Move the screwdriver in the arrow direction. Stop the movement of the screwdriver when the RF envelope waveform just turn into the maximum amplitude.
(4) Check the CTL head position meets the specifications according to steps (2) and (3) of check procedure.
(5) Tighten the fixing screws of the CTL head block.
(6) Check again that the CTL head position meets the specifications.



7-9. VIDEO HEAD DIHEDRAL ADJUSTMENT

Tool and equipment:

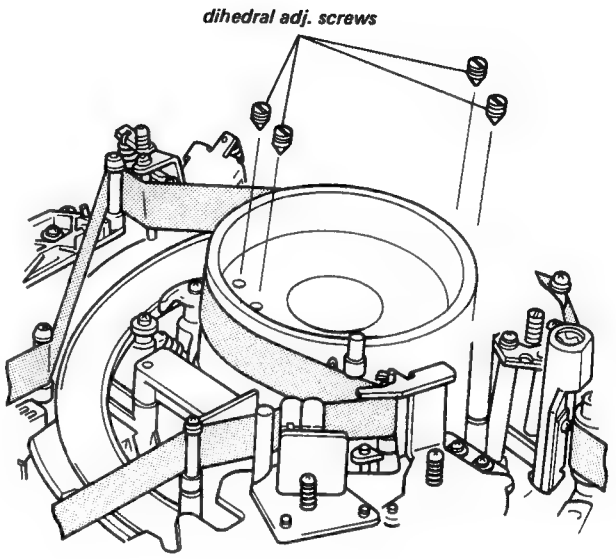
Dihedral adjusting screw
Alignment tape, RR5-2SC-PAL
Video monitor

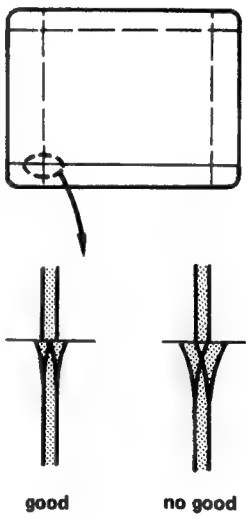
Check procedure:

Check that the vertical line beneath the switching point. If the vertical line does not split into two lines, no adjustment is necessary.

Adjustment procedure:

(1) Screw lightly four dihedral adjusting screws into the upper drum.
(2) Turn either of the two screws adjacent to the video head with white leads until some resistance is felt.
(3) If this screw is turned further, the video head is moved and the dihedral is adjusted.
Therefore, turn this screw an additional quarter turn.
(4) Check for dihedral distortion. If the distortion has gotton worse, turn this screw back one turn and tighten the other screw a quarter turn. Check again for dihedral distortion and continue in this way until dihedral error is eliminated.
(5) When the adjustment is completed, remove the four dihedral adjusting screws. After removal, playback the alignment tape and check dihedral again as error sometimes reappears after screws are removed.





TAPE RUN

SECTION 8
POWER SUPPLY AND SYSTEM CONTROL ALIGNMENT

8-1. REG +12V ADJUSTMENT(SWITCHING REGULATOR)

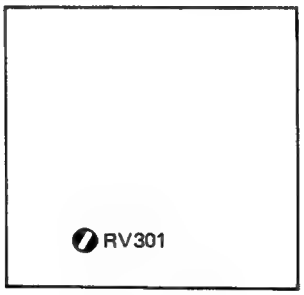
.More than 5 minutes should be elapsed after POWER ON.
.Any mode.

Check point; CN201-1/UR-02

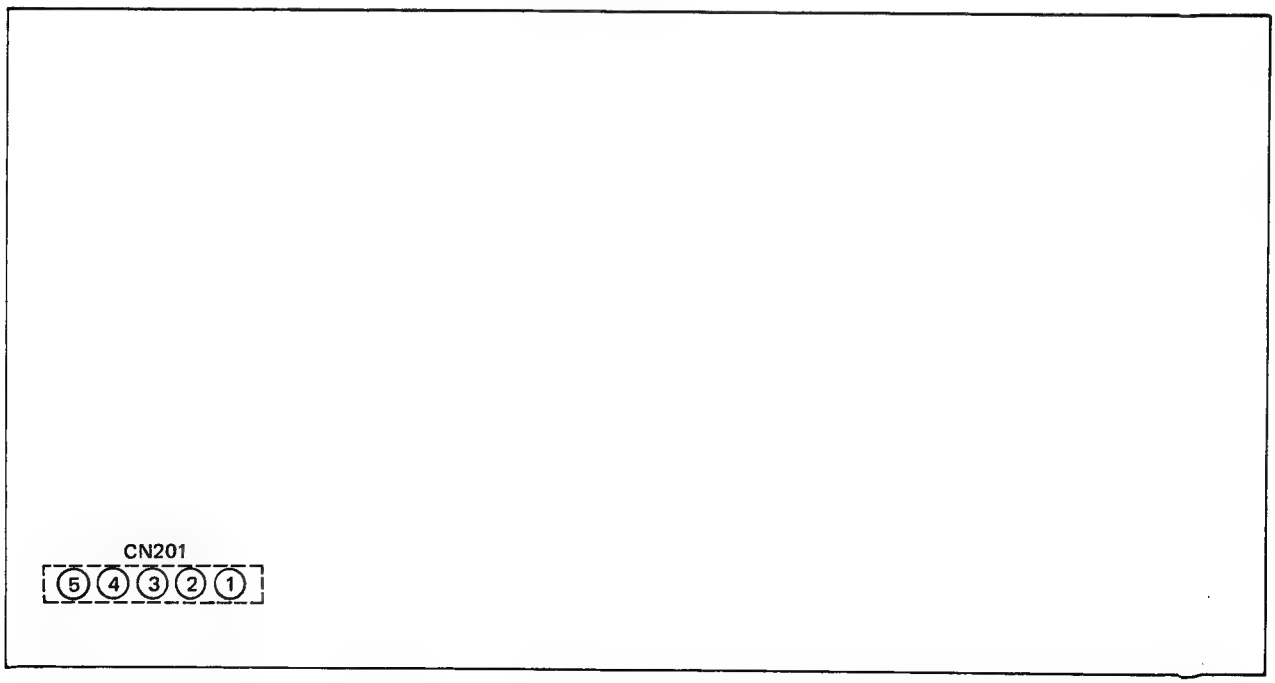
Spec: 12.0V±0.1Vdc

Adj: RV301/C(UR-02)

NOTE:If the REG 12V adjustment is attempted, re-alignment of the video system and servo system are required.
Do not attempt adjustment to REG 12V power supply unless machine performance is obviously poor due to incorrect power supply voltage.
If adjustments are made to the power supply, re-alignment of the video and servo systems are necessary.



C Board in UR-02



M Board in UR-02

8-2. REG +9V ADJUSTMENT

.POWER ON.
.STOP mode.

Check point: TP73/DC-10E

Spec: 9.0V±0.1Vdc

Adj: RV71/DC-10E

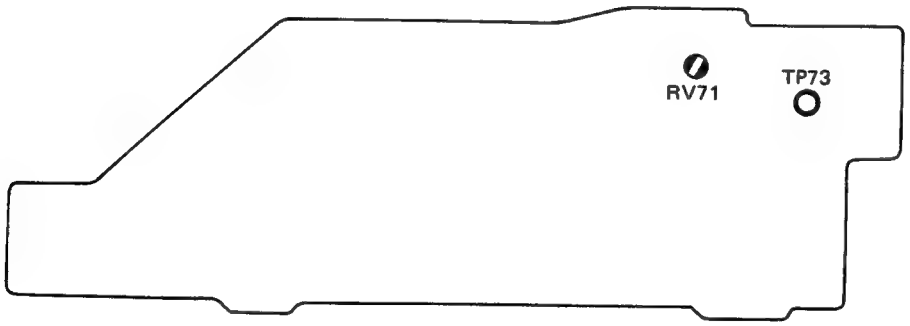
8-3. DIGITAL VCC +5V ADJUSTMENT FOR SERVO

.More than 5 minutes should be elapsed after POWER ON.
.STOP mode.

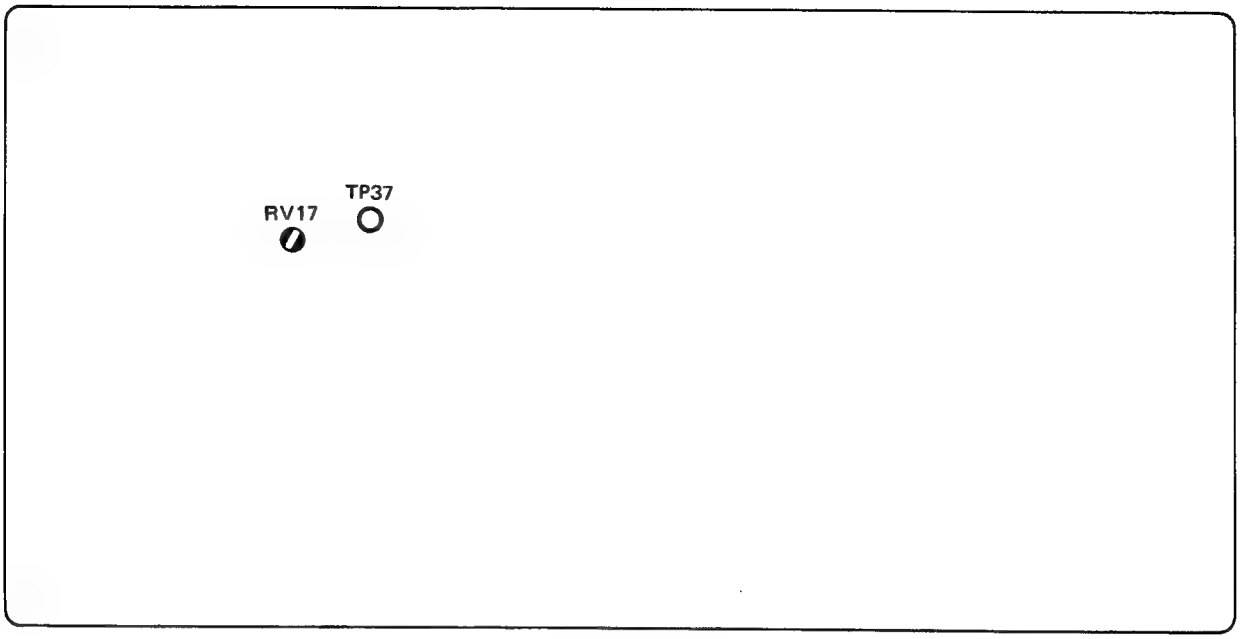
Check point: TP37/SV-47A

Spec: 5.0V±0.1Vdc

Adj: RV17/SV-47A



DC-10E Board



SV-47A Board

8-4. REG +5V ADJUUSTMENT FOR SYSTEM CONTROL

.FWD mode.

Check point: TP2/SY-68C

Spec: 5.2V±0.05Vdc

Adj: RV1/SY-68C

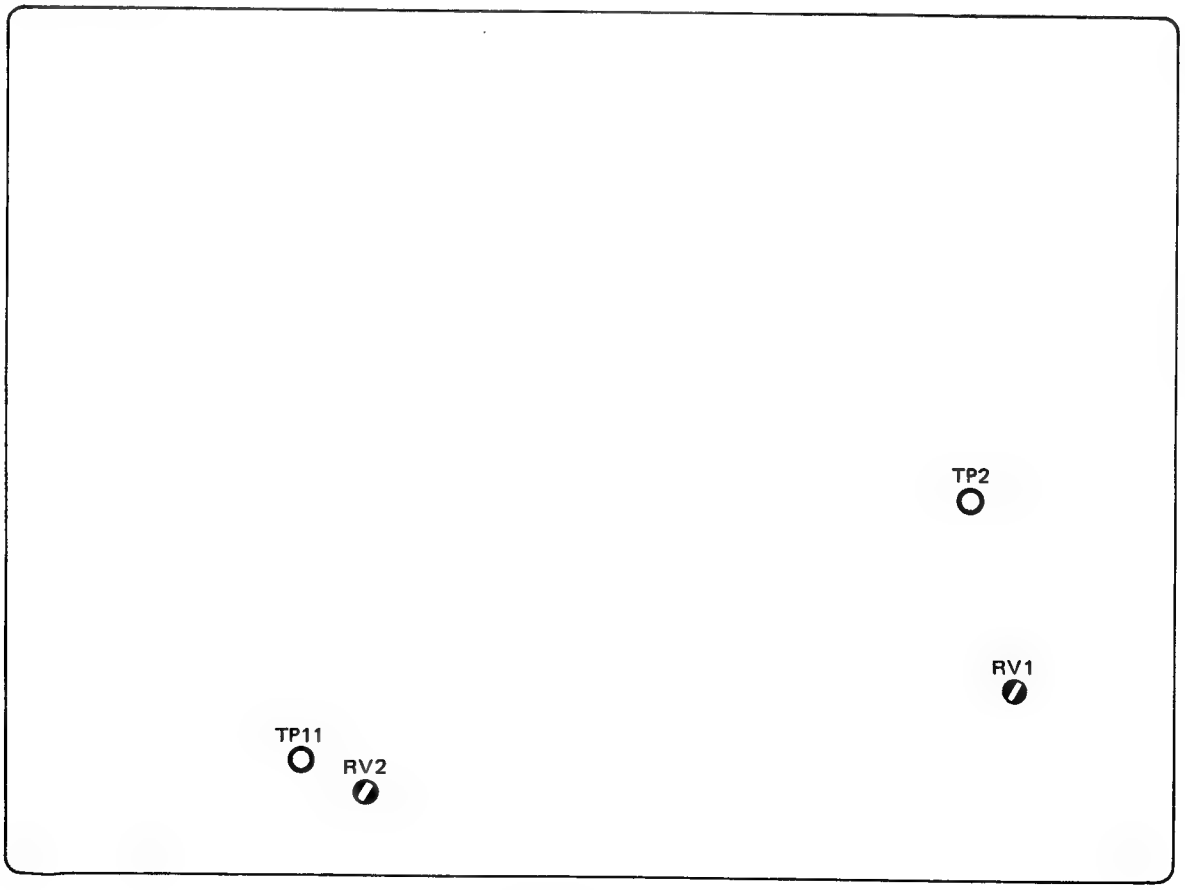
8-5. TAPE SENSOR BALANCE ADJUSTMENT

.STOP mode (Cassette up position).
.Short between CN13-2 and CN13-3 on SY-68C board
with jumper lead.

Check point: TP11/SY-68C

Spec: 6.0V±0.2Vdc

Adj: RV2/SY-68C



SY-68C Board

SECTION 9
SERVO SYSTEM ALIGNMENT

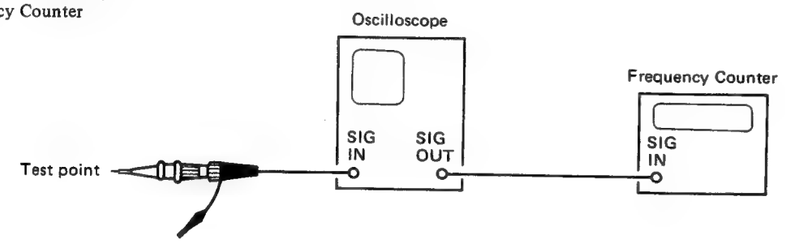
[Equipment Required]

- Alignment Tape; RR5-2SA-PAL (Part No. 8-960-015-63) or RR5-2SC-PAL (Part No. 8-960-035-61) or RR5-1S-PAL (Part No. 8-960-015-61).

RR5-2SA-PAL/RR5-2SC-PAL

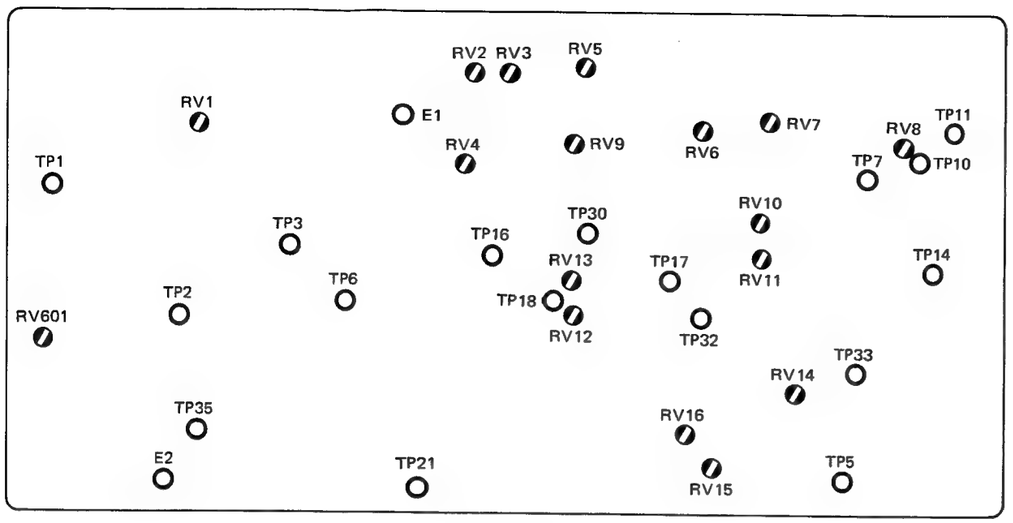
Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 KHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	———
09:00 – 14:00	208 – 300	R-F sweep	———
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 KHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 KHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	———

- Blank Tape; KCA-60, KCS-20
- Dual Trace Oscilloscope
- Frequency Counter

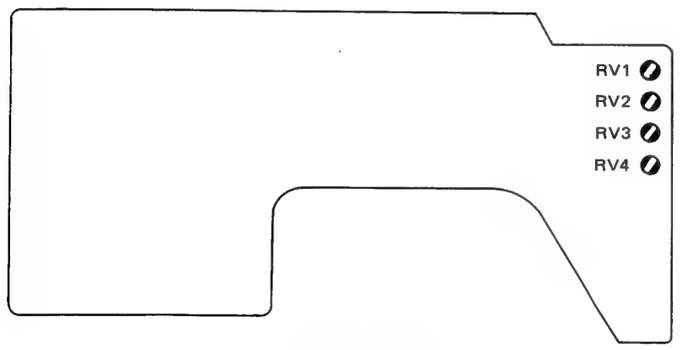


NOTE: SEARCH mode.

search speed	at TP23/SV-47A
x 1/30	200 Hz ± 5%
x 1/10	600 Hz ± 5%
x 1/5	1.2 KHz ± 5%
x 1/2	3 KHz ± 5%
x 1	6 KHz ± 5%
x 2	12 KHz ± 5%
x 5	30 KHz ± 5%



SV-47A Board



MR-6/MR-11 Board

9-1. AUDIO/CTL HEAD POSITION ADJUSTMENT

.Refer to Sec. 7-7-7.

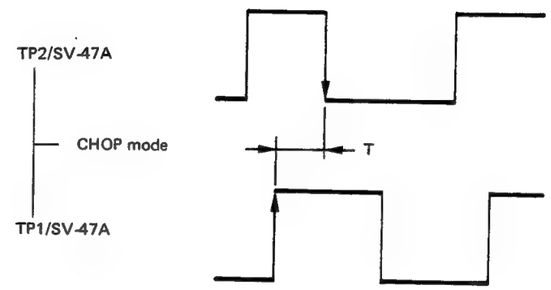
9-2. TRACKING MULTI ADJUSTMENT

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.Set the TRACKING control to its center detent.

Check point; TP1 and TP2/SV-47A

Trig; TP1/SV-47A

Spec;



T = 0 ± 100μsec

Adj; RV1/SV-47A

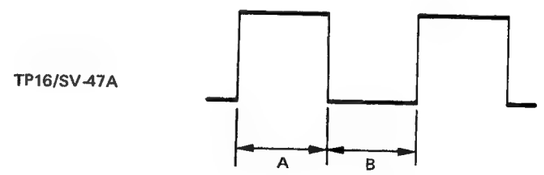
9-3. CAPSTAN FREE SPEED ADJUSTMENT

.VIDEO LINE IN;PAL color video signal.
.REC mode.

Check point; TP16/SV-47A

Trig; TP16/SV-47A(INT)

Spec;



A ≒ B

Adj; RV9/SV-47A

9-4. CAPSTAN STOP SERVO ADJUSTMENT

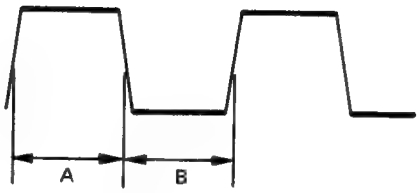
.Playing back the Alignment Tape RR5-2SC PAL.

Check point; TP17/SV-47A(STOP SERVO-1)
TP18/SV-47A(STOP SERVO-2)

Trig; TP17/SV-47A(INT)

Spec;

TP17/SV-47A
TP18/SV-47A



A ≒ B

Adj; RV12/SV-47A(STOP SERVO-1)
RV13/SV-47A(STOP SERVO-2)

9-5. CAPSTAN SEARCH x1 SPEED ADJUSTMENT.

.Playing back the audio 3KHz segment of Alignment Tape RR5-2SC PAL.
.SEARCH *FWD x1 speed.

Check point;AUDIO LINE OUT

Spec;2870Hz to 2890Hz

Adj; RV15/SV-47A

9-6. CAPSTAN SEARCH x1/30 SPEED ADJUSTMENT.

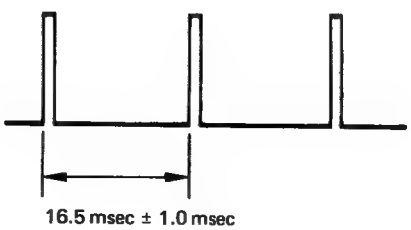
.Playing back the audio 3KHz segment of Alignment Tape RR5-2SC PAL.
.SEARCH *FWD x1/30 speed.

Check point;TP30/SV-47A

Trig;TP30/SV-47A(INT)

Spec;

TP30/SV-47A



16.5 msec ± 1.0 msec

Adj;RV10/SV-47A

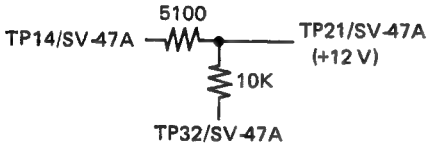
9-7. CAPSTAN SEARCH x1/15 SPEED ADJUSTMENT

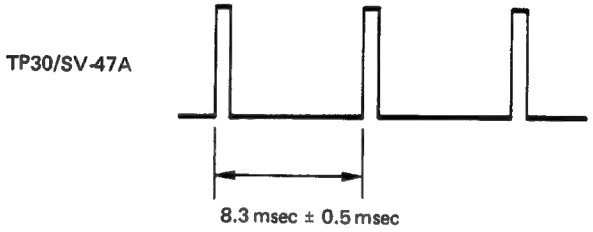
.Playing back the Alignment Tape RR5-2SC PAL.
.PLAY PAUSE mode.
.Temporarily connect(search x1/15 mode)
 resistor to TP14 and TP32 and TP21 on SV-47A board.

Check point;TP30/SV-47A

Trig; TP30/SV-47A(INT)

Spec;





Adj; RV11/SV47A

9-8. CAPSTAN SEARCH x1/2 SPEED ADJUSTMENT

.Playing back the audio 3KHz segment of Alignment Tape RR5-2SC PAL.

Check point;TP35/SV-47A

Spec;Adjust RV16/SV47A so that the transtion point of level
change from LOW level to HIGH level.

Adj;RV16/SV-47A

SERVO

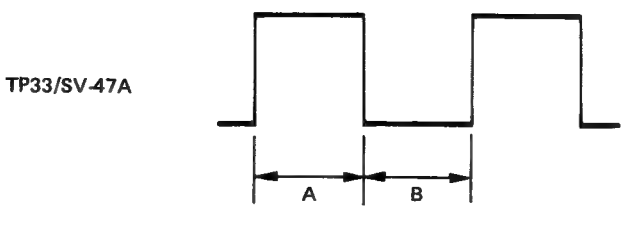
9-9. CAPSTAN FWD/REV DETECTOR ADJUSTMENT

.Playing back the Alignment Tape RR5-2SC PAL.
.Set the TRACKING control to its center detent.

Check point; TP33/SV-47A

Trig; TP33/SV-47A(INT)

Spec;



Adj; RV14/SV-47A

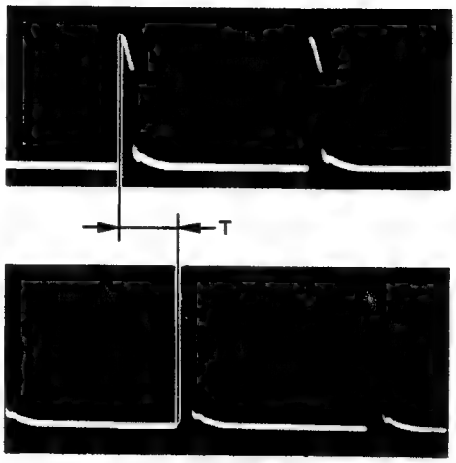
9-10. DRUM AFC BIAS ADJUSTMENT

.Playing back the Alignment Tape RR5-2SC PAL.
.FWD and SEARCH STILL modes.
.Set the TRACKING control to its center detent.

Check point; TP6/SV-47A(INT)

Trig; TP6/SV-47A(INT)

Spec;



Adj; RV8/SV-47A

NOTE:Repeat the sequence of
adj--SEARCH STILL mode--FWD mode(phase check)
until required specification is met.

9-11. DRUM AFC TRANSIENT ADJUSTMENT

.Playing back the Alignment Tape RR5-2SC PAL.
.FWD and SEARCH STILL modes.
.Set the TRACKING control to its center detent.

Check point; TP7/SV-47A

Spec; SEARCH STILL mode=(REF)
FWD mode=(REF)±0.1Vdc

Adj; RV5/SV-47A

NOTE:Repeat the sequence of
adj--FWD STILL mode--FWD mode(level check)
until required specification is met.

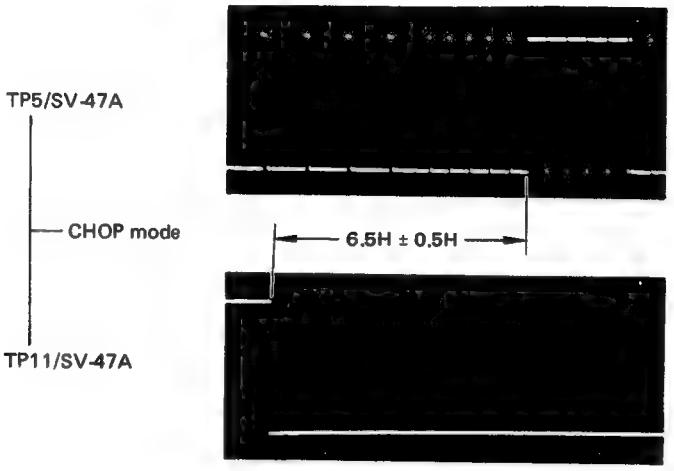
9-12. DRUM LOCK PHASE ADJUSTMENT

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.Short TP3 and TP6 and E1 on SV-47A board with jumper lead.

Check point; TP5 and TP11/SV-47A

Trig; TP1/SV-47A

Spec;



Adj; RV4/SV-47A

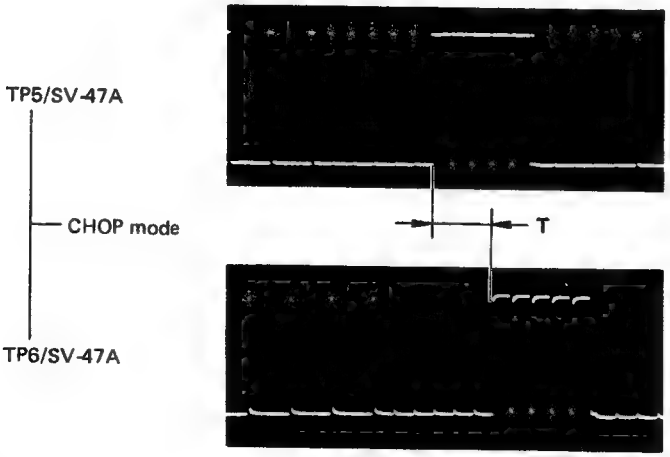
9-13. ϕ^2 PHASE ADJUSTMENT

.VIDEO LINE IN;CCIR Video signal.
.Short TP3 and E1 on SV-47A board with jumper lead.
.REC mode.

Check point;TP5 and TP6/SV-47A

Trig;TP1/SV-47A

Spec;



Adj;RV601/SV-47A

T = 0 ± 2μsec

SERVO

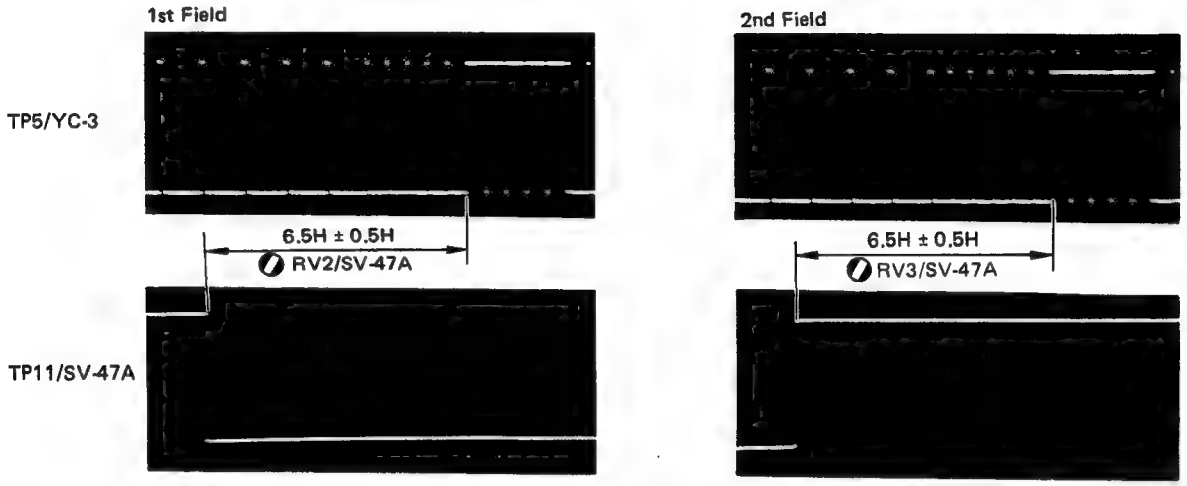
9-14. SWITCHING POSITION ADJUSTMENT

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.Short between TP6 and E3 on SV-47A board with jumper lead.
.Set the TRACKING control to its center detent.

Check point; TP11/SV-47A and TP5/YC-3

Trig; TP1/SV-47A

Spec;



Adj; RV2/SV-47A(1st Field)
RV3/SV-47A(2nd Field)

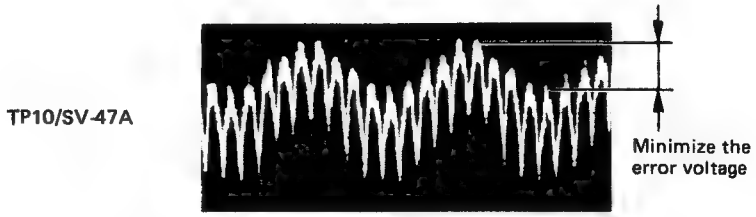
9-15. PICTURE SPLITTING COMPENSATOR ADJUSTMENT

.Playing back the Alignment Tape RR5-2SC PAL.

Check point;TP10/SV-47A

Trig;TP1/SV-47A

Spec;



Adj;RV6/SV-47A(PHASE)
RV7/SV-47A(LEVEL)

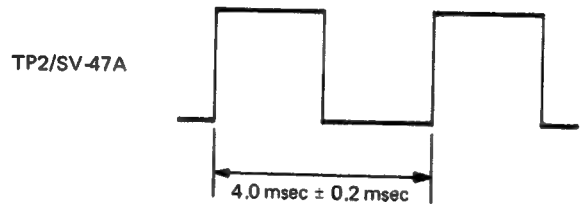
9-16. REEL SERVO ADJUSTMENT

9-16-1. x10 Picture Search Speed Adjustment

.Playing back the Alignment Tape RR5-2SC PAL.
.*FWD x10 Picture Search mode

Check point; TP2/SV-47A

Spec;



Adj; RV3/MR-6 or MR-11

NOTE: In x10 PICTURE Search mode, the pinch roller is apart from the capstan and the 10 times picture appears on the monitor in FWD and REV SEARCH mode.

When VTR is operated in x10 Picture Search mode,
RM-440 remote controller is used.
At this time, RM-440 SEARCH DIAL is turned fully clockwise (FWD SEARCH mode)or fully counter-clockwise(REV SEARCH mode).

If RM-440 is not available, x10 picture search mode is set up as the following process.

.Temporarily connect 10kohm Resistor between IC136-4 and IC33-6 of SY-68C board.
.Unsolder between IC136-4 and IC33-6 of SY-68C board.

.Short between IC33-6 and E8 of SY-68C board with jumper lead.

.Connect 10kohm Resistor between IC134-3 and IC32-4 of SY-68C board.
.Unsolder between IC134-3 and IC32-4 of SY-68C board.

.Short between IC32-4 and E8 of SY-68C board with jumper lead.

.Short between CN32-11 and E8 of SY-68C board with jumper lead.
.Short between CN22-5 and E8 or +5V with jumper lead.
    .Short between CN22-5 and E8;REV mode.
    .Short between CN22-5 and +5V;FWD mode.

After x10 Picture Search Speed is adjusted, the reset circuit is made to original.

9-16-2. Still Speed Adjustment

.FWD PAUSE mode

Check point; CN6-1 and CN6-3/MR-6 or MR-11

Spec; 0.4V±0.02Vdc

Adj; RV4/MR-6 or MR-11

NOTE; **FWD Torque Alignment(RV1/MR-6 or MR-11)** and **REV Torque Alignment(RV2/MR-6 or MR-11)** Refer to Mechanical Alignment sec.6-3 and 6-4.

SECTION 10
AUDIO SYSTEM ALIGNMENT

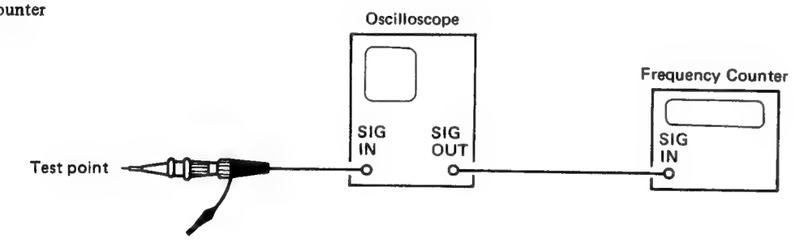
[Equipment Required]

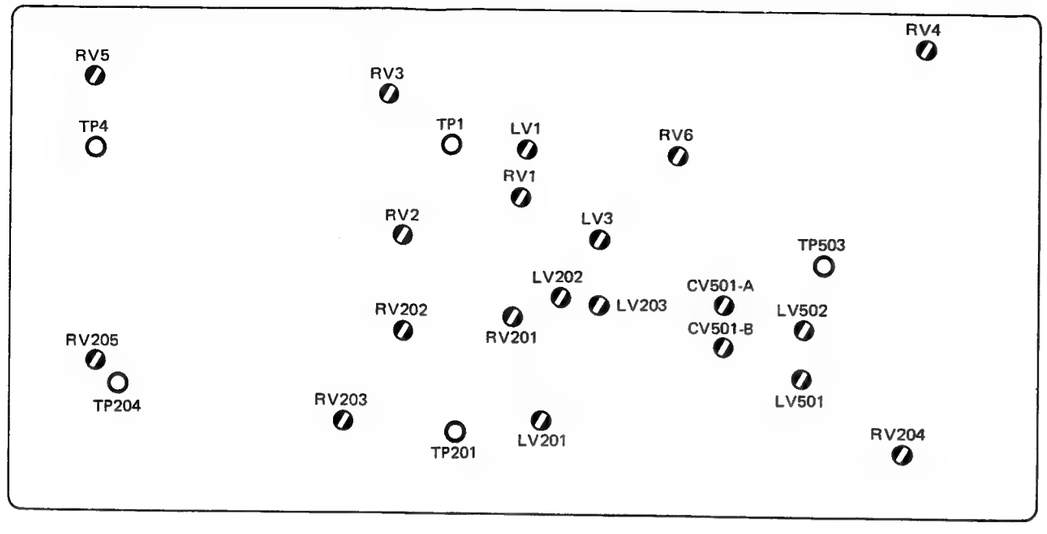
- Alignment Tape; RR5-2SA-PAL (Part No. 8-960-015-63) or RR5-2SC-PAL (Part No. 8-960-035-61) or RR5-1S-PAL (Part No. 8-960-015-61).

RR5-2/SA-PAL/RR5-2SC-PAL

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 KHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	———
09:00 – 14:00	208 – 300	R-F sweep	———
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 KHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 KHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	———

- Blank Tape; KCA-60, KCS-20
- Oscilloscope
- Frequency Counter





AU-21A Board

10-1. PB OUTPUT FREQUENCY RESPONSE ADJUSTMENT

.Playing back the 1kHz and 10kHz segments of Alignment Tape.

Check Point; AUDIO LINE OUT(Terminated by 47kohm)

Spec; (1kHz Level=REF Level)
10kHz Level=(REF Level)-10dB±0.5dB

Adj; RV1/AU-21A(CH-1)
RV201/AU-21A(CH-2)

10-2. AUDIO LEVEL CONTROL SETTING/METER CALIBRATION ADJUSTMENT

.MIC IN;1kHz,-60dB
.LIMITER sw;OFF
.EE mode
.AUDIO LINE OUT (Terminated by 47kohms)-5dB±0.5dB(CH-1=CH-2)
(By AUDIO LEVEL VR)

Check Point; AUDIO METER(CH-1=CH-2)

Spec; 0dB±0.5dB

Adj; RV4/AU-21A(CH-1)
RV204/AU-21A(CH-2)

NOTE;The AUDIO LEVEL VR should not be touched until rest of Sec.10 Audio System Alignment are completed.

10-3. PB OUTPUT LEVEL ADJUSTMENT

Playing back the 10kHz segment of Alignment Tape.

Check point; AUDIO LINE OUT (Terminated by 47kohm)

Spec; -5dB±0.5dB(CH-1=CH-2)

Adj; RV2/AU-21A(CH-1)
RV202/AU-21A(CH-2)

10-4. AUDIO BIAS/ERASE FREQUENCY ADJUSTMENT

.AUDIO IN;no signal input.
.REC mode.

Check point; TP503/AU-21A

Spec: 71kHz±0.1kHz

Adj; LV501/AU-21A

10-5. AUDIO BIAS CURRENT ADJUSTMENT

.MIC IN;1kHz/10kHz,-80dB.
.REC/PB mode.

Check point; AUDIO LINE OUT (Terminated by 47kohm)

Spec;

$$\begin{bmatrix}\text{10kHz} \\ \text{REC/PB Level}\end{bmatrix} = \begin{bmatrix}\text{1kHz} \\ \text{REC/PB LEVEL}\end{bmatrix} \quad +0.5\text{dB}$$

Increasing the BIAS voltage by 1V(rms)
(measured at TP501/AU-21A for CH-1,TP502/AU-21A for CH-2)
corresponds to the decrease of 0.4dB of the 10kHz REC/PB level

Adj; CV501-A/AU-21A(CH-1)
CV501-B/AU-21A(CH-2)

10-6. BIAS TRAP ADJUSTMENT (REC-1)

.AUDIO IN;no signal input.
.REC mode.

Check point; TP4/AU-21A(CH-1)
TP204/AU-21A(CH-2)

Spec; Adjust for minimum signal amplitude.

Adj; LV3/AU-21A(CH-1)
LV203/AU-21A(CH-2)

10-7. BIAS TRAP ADJUSTMENT (REC-2)

.AUDIO IN;no signal input.
.REC mode.

Check point; TP1/AU-21A(CH-1)
TP201/AU-21A(CH-2)

Spec; Adjust for minimum signal amplitude.

Adj; LV1/AU-21A(CH-1)
LV201/AU-21A(CH-2)

10-8. AUDIO LIMITER GAIN ADJUSTMENT

. MIC IN;1kHz,-30dB.
. LIMITER sw;ON.
. STOP mode.

Check point; AUDIO LINE OUT(Terminated by 47kohm)

Spec; -2dB±0.5dB(CH-1=CH-2)

Adj; RV3/AU-21A(CH-1)
RV203/AU-21A(CH-2)

10-9. REC LEVEL ADJUSTMENT

.MIC IN;1kHz,-60dB.
.LIMITER sw;OFF
.REC and PB modes.

Check point; AUDIO LINE OUT(Terminated by 47kohm)

Spec; The self record/playback level should be -5dB±0.5dB(The level difference between CH-1 and CH-2 should be less than 0.5dB)

If adjustment is found to be necessary, increase or decrease the EE signal level at TP5/AU-21A(CH-1) or TP205/AU-21A(CH-2) during EE mode,by the same signal level as is found to be adjusted in the self record/playback procedure.

Adj; RV5/AU-21A(CH-1)
RV205/AU-21A(CH-2)

10-10. INSERT BIAS FREQUENCY ADJUSTMENT

.AUDIO IN; no signal input.
.AUDIO DUB mode(CH-1).

Check point; TP503/AU-21A

Spec; 71kHz±0.2kHz

Adj; LV502/AU-21A(CH-1)

10-11. PB BIAS TRAP ADJUSTMENT

.Using a blank tape that has not been recoded audio signal.
.AUDIO DUB mode(CH-1).

Check point; TP202/AU-21A

Spec; Minimize the signal amplitude(bias leak)

Adj: LV202/AU-21A

10-12. CROSS-TALK CANCEL ADJUSTMENT

.CH-1 MIC IN;5kHz,-60dB.
.Using an audio blank tape.
.AUDIO DUB mode(CH-1).

Check point;CH-2 LINE OUT

Spec; Minimize the signal amplitude(cross-talk)

Adj; RV6/AU-21A

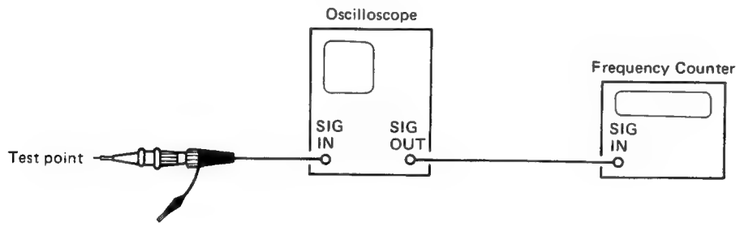
SECTION 11
VIDEO SYSTEM ALIGNMENT

[Equipment Required]

- Dual Trace Oscilloscope
- Frequency Counter
- Video Sweep Generator (with Burst)
- Blank Tape; KCA-60 (SONY standard product)
- Alignment Tape; RR5-2SA-PAL (Part No. 8-960-015-63) or RR5-2SC-PAL (Part No. 8-960-035-61) or RR5-1S-PAL (Part No. 8-960-015-61)

RR5-2SA-PAL/RR5-2SC-PAL

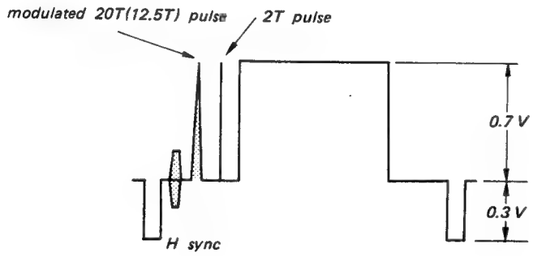
Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 KHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	———
09:00 – 14:00	208 – 300	R-F sweep	———
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 KHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 KHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	———



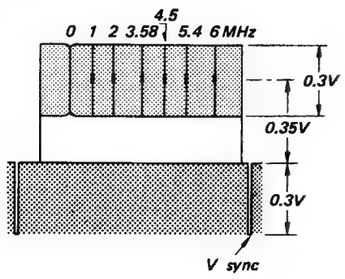
[Video Signals Required]

- Color Bar Signal; 75% color bar signal
- Color Video Signal; Any video signal that has the CCIR specified subcarrier and sync signals.

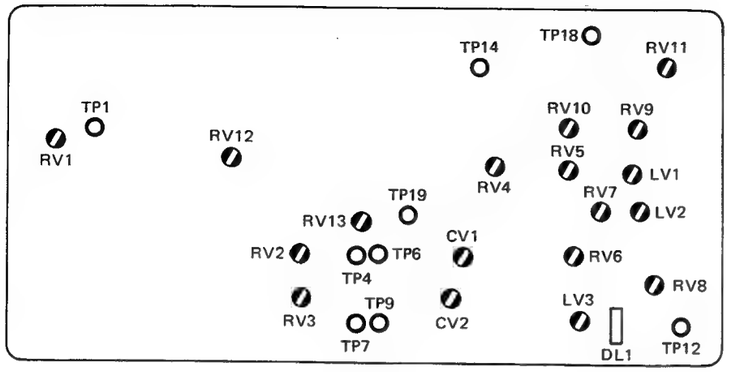
- Sin^2 wave signal;



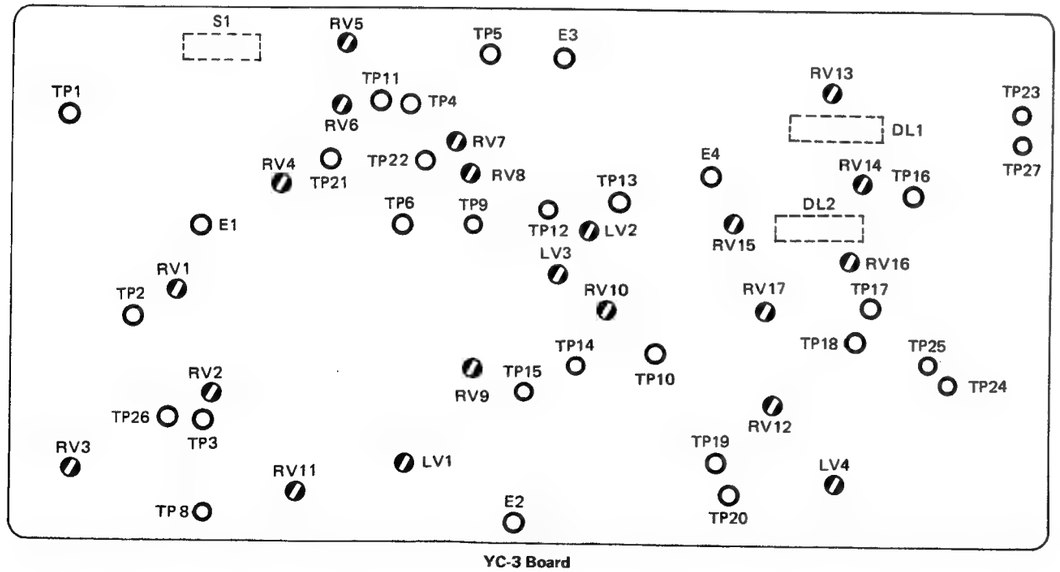
- Gated Sweep Signal;



- Sweep Signal;



RP-8A Board



YC-3 Board

11-1. PLAYBACK RF AMPLIFIER ADJUSTMENT

11-1-1. PB RF Frequency Response Adjustment

.Playing back the RF sweep segment of Alignment Tape RR5-2SA PAL or RR5-2SC PAL.
.Short between TP6 and E1 on SV-47A board with jumper lead.
.Set the TRACKING control to its center detent.

(1)6.0MHz Tuning Adjustment

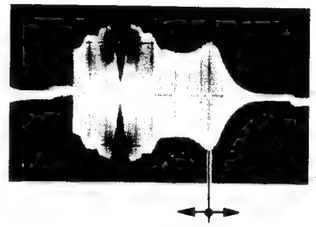
.RV4(CH-A)and RV6(CH-B)/RP-8A; Fully clockwise.
.RV5(CH-A)and RV7(CH-B)/RP-8A; Fully counterclockwise.

Check point; TP18/RP-8A

Trig; TP14/RP-8A
CH-A:(-),CH-B:(+)

Spec;

TP18/RP-8A



Waveform peak = 6.0MHz

Adj; CV1/RP-8A(CH-A)
CV2/RP-8A(CH-B)

(2)4.5MHz Tuning Adjustment

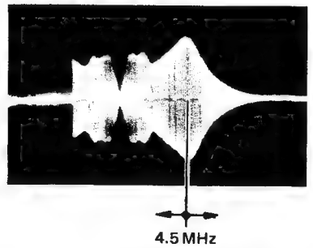
.RV4(CH-A)and RV6(CH-B); Fully counterclockwise.
.RV5(CH-A)and RV7(CH-B); Fully clockwise.

Check point; TP18/RP-8A

Trig; TP14/RP-8A
CH-A:(-),CH-B:(+)

Spec;

TP18/RP-8A



Waveform peak = 4.5MHz

Adj; LV1/RP-8A(CH-A)
LV2/RP-8A(CH-B)

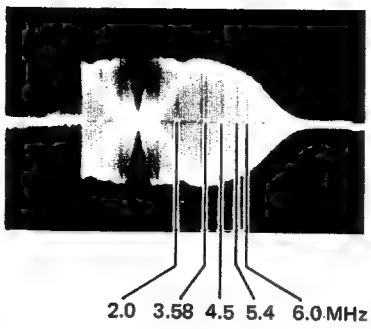
(3)Frequency Response Adjustment

Check point; TP18/RP-8A

Trig; TP14/RP-8A
CH-A:(-),CH-B:(+)

Spec;

TP18/RP-8A



RR5-2SA PAL

2.0MHz	3.58MHz	4.5MHz	6.0MHz
100% REF.	100% ±10%	90% ±10%	50% ±15%

RR5-2SC PAL

2.0MHz	3.58MHz	4.5MHz	6.0MHz
100% REF.	100% +15 % -10	80% +15 % -10	75% ±10%

Adj; RV4(HIGH)/RV5(MIDDLE);CH-A/RP-8A
RV6(HIGH)/RV7(MIDDLE);CH-B/RP-8A

11-1-2. PB Y-RF Output Balance Adjustment

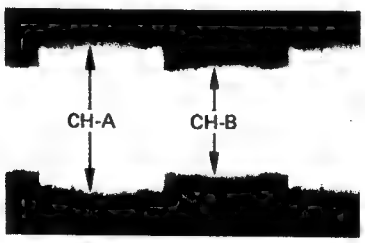
.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.Set the TRACKING control to its maximum level center.

Check point; TP18/RP-8A

Trig; TP14/RP-8A

Spec;

TP1/RP-8A



CH-A Level = CH-B Level

Adj; RV10/RP-8A

11-1-3. PB Y-RF Output Level Adjustment

.Playing back the RF sweep segment of Alignment Tape RR5-2SA PAL or RR5-2SC PAL.
.Set the TRACKING control to its maximum level center.

Check point; TP18/RP-8A

Trig; TP14/RP-8A

Spec;

RR5-2SA PAL
A=0.5V±0.05Vp-p

RR5-2SC PAL
A=0.6V±0.05Vp-p

Adj; RV11/RP-8A

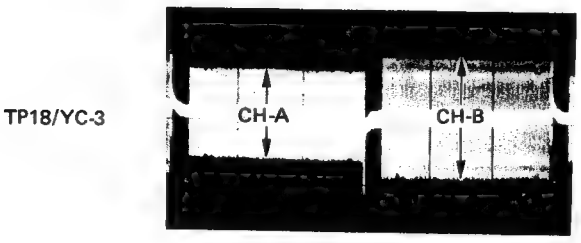
11-1-4. PB Chroma-RF Output Balance Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.Set the TRACKING control to its maximum level center.

Check point; TP18/YC-3

Trig; TP14/RP-8A

Spec;



CH-A Level = CH-B Level

Adj; RV9/RP-8A

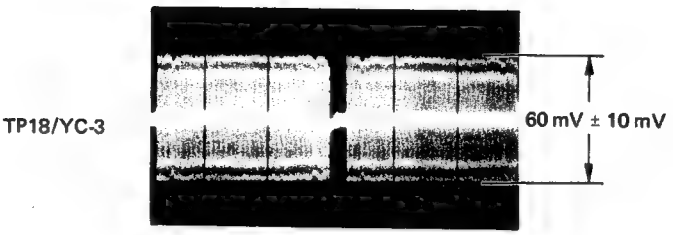
11-1-5. PB Chroma-RF Output level Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.Set the TRACKING control to its maximum level center.
.SYSTEM SELECT sw;PAL

Check point; TP18/YC-3

Trig; TP1/SV-47A

Spec;



Adj; RV8/RP-8A

NOTE; Do not use the Alignment Tape,RR5-1S PAL.

11-2. Y AMPLIFIER ADJUSTMENT

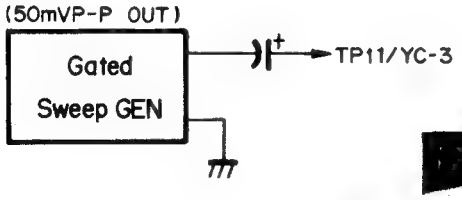
11-2-1. Noise Canceller Adjustment

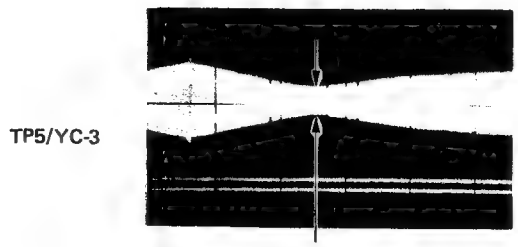
.VIDEO LINE IN;no signal input.
.Short between Collector of Q42 and E2 on YC-3 board.
.Temporarily connect the capacitor(220/16V)between TP4 and E2 on YC-3 board
.Temporarily connect the GATED sweep to TP11 on the YC-3 through a capacitor 47/16V as shown in spec.
.NOISE CANCEL sw on YC-3 to be SHARP position.
.STOP mode(Cassette up position).

Check point; TP5/YC-3

Trig;TP5/YC-3(INT)

Spec;





Minimize the amplitude of cross point
(cross point: 3.0 MHz ~ 3.8 MHz)

Adj; RV5/YC-3

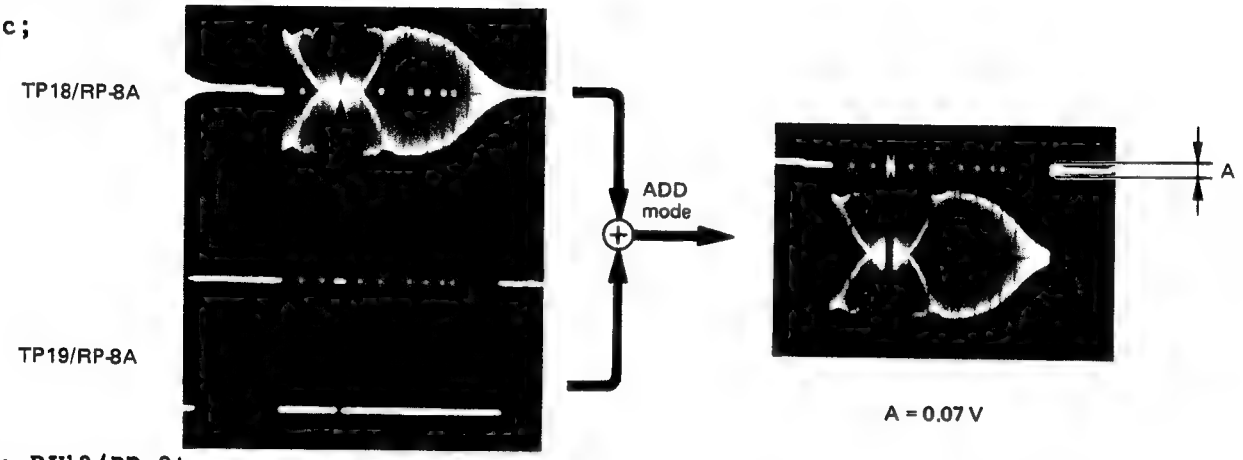
11-2-2. Drop-Out Sensitivity Level Adjustment

.Playing back the RF sweep segment of Alignment Tape RR5-2SC PAL.

Check point; TP18 and TP19/RP-8A

Trig; TP14/RP-8A

Spec;



Adj; RV13/RP-8A

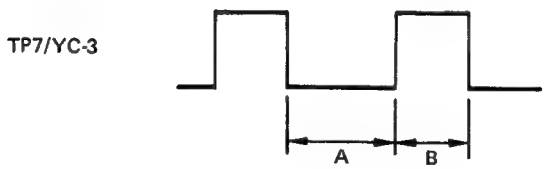
11-2-3. RF-Band Noise Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.SEARCH x5 REV mode.
.Preset the RV12/RP-8A Fully counterclockwise.
.SYSTEM SELECT sw;PAL

Check point;TP7/YC-3

Trig;YP7/YC-3(INT)

Spec;



$$\frac{B}{A} = \frac{2}{3}$$

Adj;RV12/RP-8A

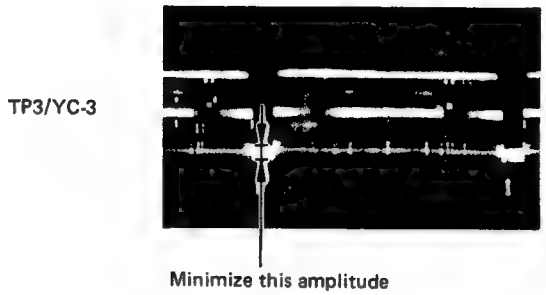
11-2-4. Carrier Balance Adjustment

.Playing back the Monoscope segment of Alignment Tape RR5-2SC PAL.

Check point; TP3/YC-3

Trig; TP1/SV-47A

Spec;



Adj; RV2/YC-3

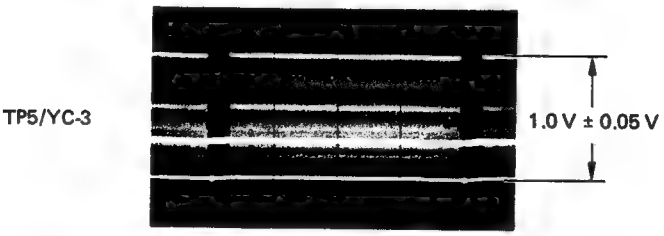
11-2-5. Y Output Level Adjustment

.VIDEO LINE IN;PAL Color bar signal.
.Self Recod and then Playback mode.
.VIDEO LINE OUT;Terminated by 75 ohm Resistor.

Check point; TP5/YC-3

Trig; TP1/SV-47A

Spec;



Adj; RV6/YC-3

Repeat the sequence of
Adj--Record--Playback(level check)
until required specification is met.

11-2-6. SYNC Tip Carrier Frequency Adjustment

.No signal input.
.EE mode.

Check point; TP1/RP-8A

Spec; 3.8MHz±0.05MHz

Adj; RV7/YC-3

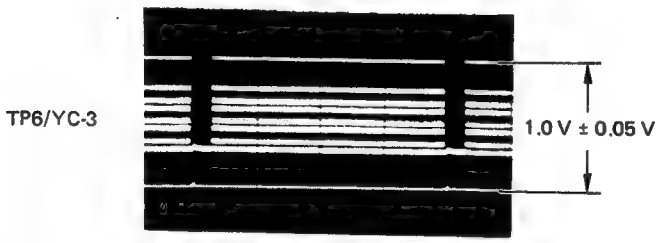
11-2-7. FM Deviation Adjustment

.VIDEO LINE IN;CCIR color bar signal.
.Self Record and then Playback mode.
.RV8/YC-3(White clip)fully counterclockwise.

Check point; TP6/YC-3(Terminated by 75 ohm Resistor)

Trig; TP1/SV-47A

Spec;



Adj; RV4/YC-3

Repeat the sequence of
Adj--Record--Playback(Sec.11-2-5; Y output level check)
until required specification is met.

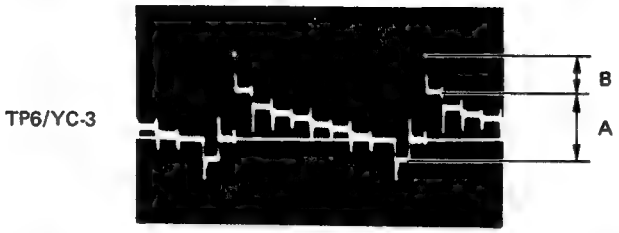
11-2-8. White Clip Adjustment

.VIDEO LINE IN;CCIR color bar signal.
.EE mode.

Check point; TP6/YC-3

Trig; TP9/YC-3

Spec;



$A : B = 2 : 1^{+0}_{-2.5\%}$

Adj; RV8/YC-3

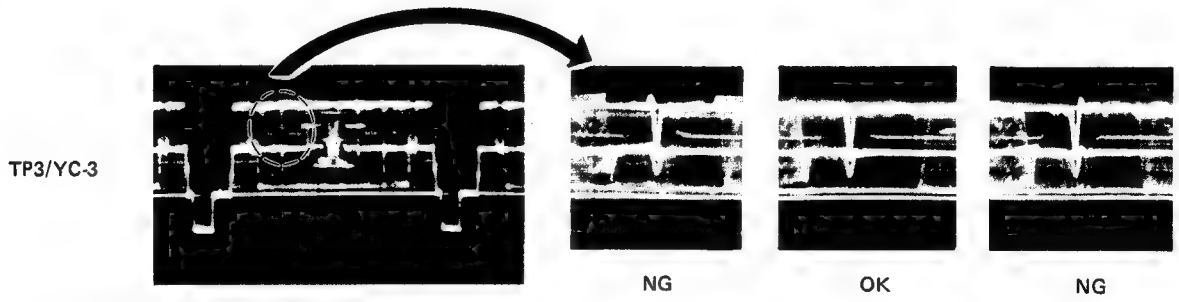
11-2-9. PB Y Phase Equlizer Adjustment

.Playing back the M.S/with burst segment of Alignment Tape RR5-2SC PAL.

Check point; TP3/YC-3

Trig; TP9/YC-3

Spec;



Adj; RV3/YC-3

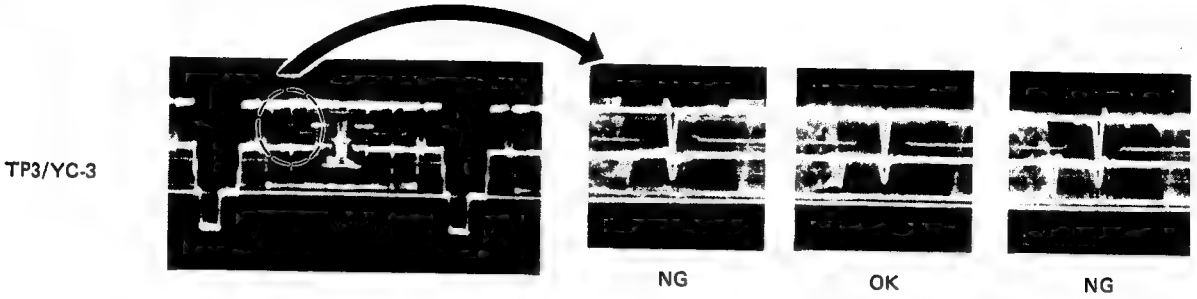
11-2-10. REC Color Y Phase Equalizer Adjustment

.VIDEO LINE IN;CCIR Monoscope with burst.
.EE mode.

Check point; TP3/YC-3

Trig; TP9/YC-3

Spec:



Adj: RV1/YC-3

11-3. CHROMA AMPLIFIER ADJUSTMENT

11-3-1. DUB Audio Bias Trap Adjustment

.Playing back the tape that has been recorded only CTL signal.
.AUDIO DUB mode(CH-1).

Check point; TP12/RP-8A

Spec; Minimize the amplitude(audio bias leak)

Adj; LV3/RP-8A

* To record the only CTL signal onto the tape,
  Short between TP1 and E2 on RP-8A board with jumper lead and
  put the machine into the REC mode.

11-3-2. 4.43MHz Reference Oscillator Frequency Adjustment

.STOP mode.
.SYSTEM SELECT sw;PAL

Check point; TP13/YC-3

Trig; TP13/YC-3(INT)

Spec; 4.433631MHz±5Hz

Adj; CV1/YC-3

11-3-3. APC 5.12MHz Tuning Adjustment

.VIDEO LINE IN;CCIR color bar signal.
.EE mode.
.SYSTEM SELECT sw;PAL

Check point; TP12/YC-3

Trig; TP12/YC-3(INT)

Spec; Maximize the amplitude(5.119193MHz±1kHz)

Adj; LV2 and LV3/YC-3

11-3-4. Chroma Converter Balance Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.

Check point; TP20/YC-3

Trig; TP9/YC-3

Spec;

Adj; RV15/YC-3

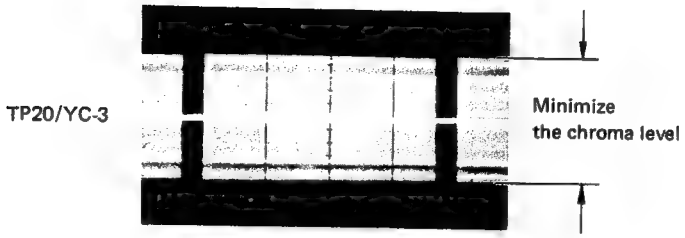
11-3-5. ACC Burst Tuning Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.

Check point; TP20/YC-3

Trig;TP1/SV-47A

Spec;



Adj; LV4/YC-3

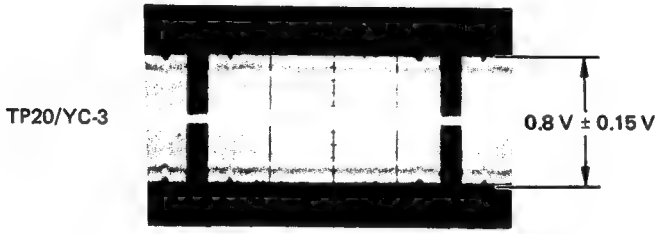
11-3-6. ACC Level Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.

Check point; TP20/YC-3

Trig; TP1/SV-47A

Spec;



Adj; RV10/YC-3

11-3-7. VCO Center Frequency Level Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.
.COLOR LOCK sw;Center position.

Check point; TP15/YC-3

Spec; 8.1V±0.1Vdc set to be available for the normal hue on the monitor screen.

Adj; RV9/YC-3

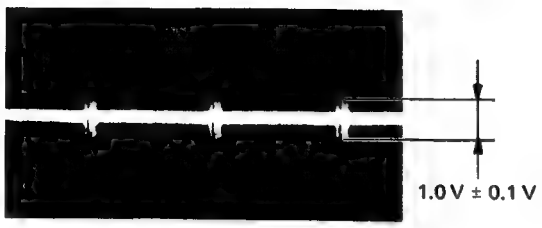
11-3-8. APC Gain Adjustment

.Playing back the color bar segment of Alignment Tape RR5-2SC PAL.

Check point;TP15/YC-3

Trig; TP9/TC-3

Spec;



Adj; RV11/YC-3

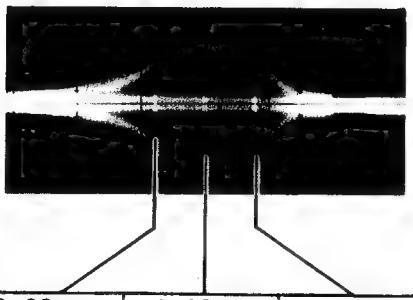
11-3-9. REC Chroma Frequency Response Adjustment

.VIDEO LINE IN;The Gated sweep signal with burst.
.EE mode.

Check point; TP16/YC-3

Trig; TP1/SV-47A

Spec;



3.93MHz	4.43MHz	4.93MHz
90±15%	100% REF.	90%±15%

Adj; LV1/YC-3

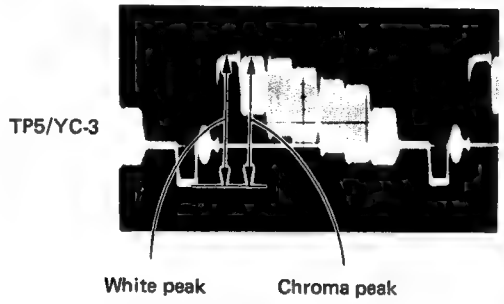
11-3-10. Chroma Mix Level Adjustment

.VIDEO LINE IN;CCIR color bar signal.
.Self Record then play back mode.
.VIDEO LINE OUT;Terminated by 75 ohm Resistor.
.SYSTEM SELECT sw;PAL

Check point; TP5/YC-3

Trig; TP9/YC-3

Spec; (white peak level)=(chroma peak level)



Adj; RV18/YC-3

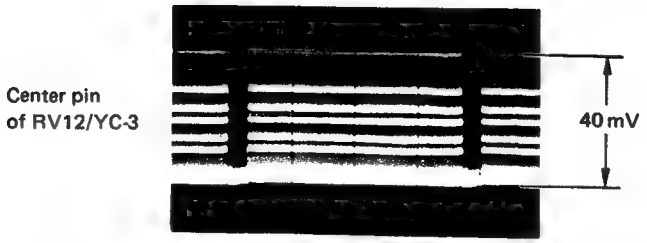
11-3-11. Differential Gain Adjustment

.VIDEO LINE IN;PAL color bar signal.
.Self Record then play back mode.
.VIDEO LINE OUT;Terminated by 75 ohm Resistor.

Check point;Center pin of RV12/YC-3

Trig;TP1/SV-47A

Spec;



Adj;RV12/YC-3

11-4. RECORD AMPLIFIER ADJUSTMENT

11-4-1. Y REC Current Frequensy Responce Adjustment

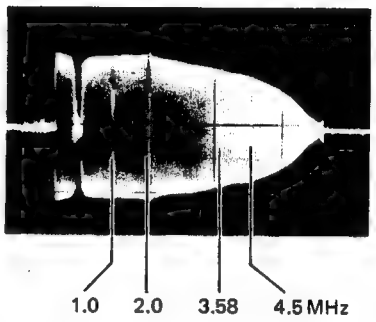
.VIDEO LINE IN;CCIR Video signal(B/W)
.Short between TP1 and E2 on RP-8A board with jumper lead.
.Connect the Sweep signal between TP3 and E2 on RP-8A board.
.Unsolder temporarily,between TP4 and TP6 (TP7 and TP9)
on RP-8A Board.
.REC mode.

Check point; Waveform between TP4 and TP6/RP-8A(CH-A)
TP7 and TP9/RP-8A(CH-B)

Trig;TP1/SV-47A

Spec;

Waveform between
TP4 and TP6/RP-8A
(TP7 and TP9/RP-8A)



1.0MHz	3.5MHz	4.5MHz
100% REF.	82% ±3%	74% ±3%

Adj; RV2(CH-A)/RP-8A
RV3(CH-B)/RP-8A

After this adjustment,solder between TP4 and TP6/RP-8A,
TP7 and TP9/RP-8A respectively.

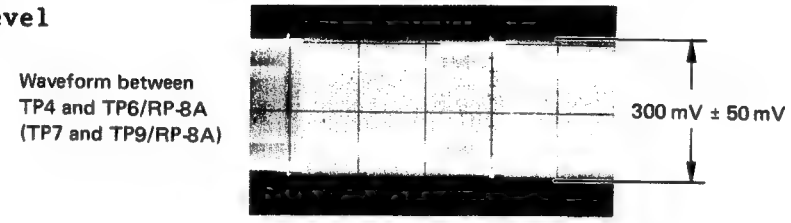
11-4-2. Y REC Current Level Adjustment

.VIDEO LINE IN;PAL color video signal.
.Unsolder temporarily,between TP4 and TP6 (TP7 and TP9)
on RP-8A Board.
.REC mode.

Check point;Waveform between TP4 and TP6/RP-8A(CH-A)
TP7 and TP9/RP-8A(CH-B)

Trig; TP14/RP-8A

Spec; sync tip level



Adj; RV1/RP-8A

After this adjustment,solder between TP4 and TP6/RP-8A,
TP7 and TP9/RP-8A respectively.

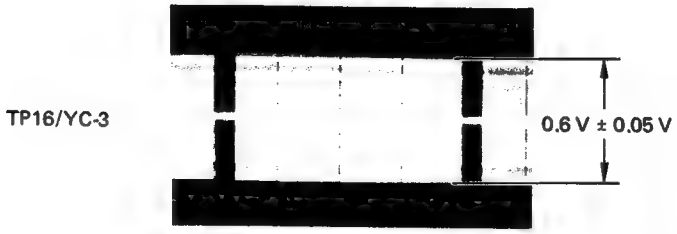
11-4-3. Chroma REC Current Level Adjustment

.VIDEO LINE IN;PAL color Bar signal.
.REC mode.

Check point; TP16/YC-3

Trig; TP1/SV-47A

Spec;



Adj; RV13/YC-3

11-5. DUB CHROMA ADJUSTMENT

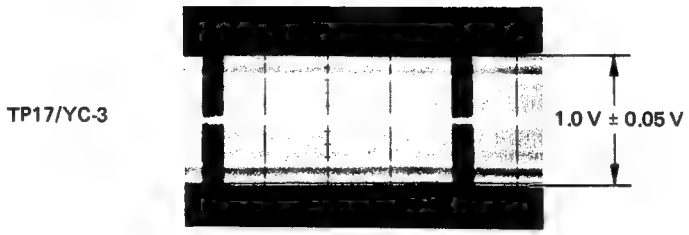
11-5-1. DUB Chroma Output Level Adjustment(REC/EE)

.VIDEO LINE IN;PAL color bar signal.
.EE mode.

Check point;TP17/YC-3

Trig;TP1/SV-47A

Spec;



Adj;RV17/YC-3

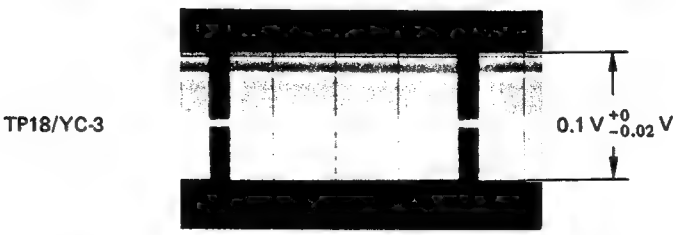
11-5-2. Chroma REC Current Adjustment

.VIDEO LINE IN;PAL color bar signal.
.Playing back the self-recorded tape.

Check point; TP18/YC-3

Trig; TP1/SV-47A

Spec;



Adj; RV14/YC-3

Repeat the sequence of
adj--record--playback(level check)until required
specification is met.

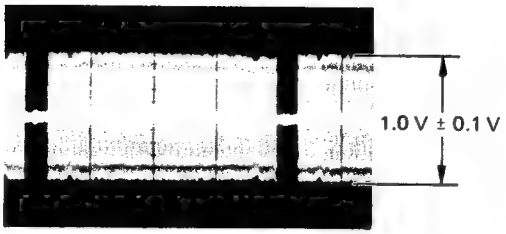
11-5-3. DUB Chroma Output Level Adjustment(PB/DUB)

.VIDEO LINE IN;PAL color Bar signal.
.Playing back the self-recorded tape.

Check point;TP17/YC-3

Trig;TP1/SV-47A

TP17/YC-3



Adj;RV16/YC-3

Repeat the sequence of
adj--record--playback(level check)until required
specification is met.

11-6. Y/CHROMA DELAY TIME ADJUSTMENT

.This adjustment is usually not necessary since Y/Chroma delay time variation among multiple recorders and players are negligibly small.
.VIDEO LINE OUT:Terminated by 75 ohm Resistor.

11-6-1. PB Y/C Delay Time Adjustment

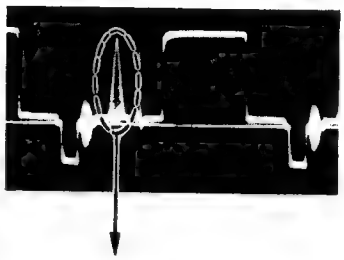
.Playing back the MOD.20T pulse segment of Alignment Tape RR5-2SC PAL.

Check point; TP5/YC-3

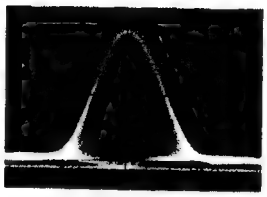
Trig; TP9/YC-3

Spec;

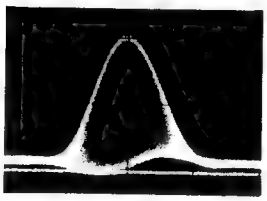
TP5/YC-3



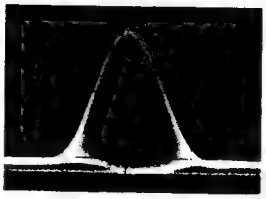
GOOD



NG



NG



Adj; DL1/RP-8A

11-6-2. REC Y/C Delay Time Adjustment

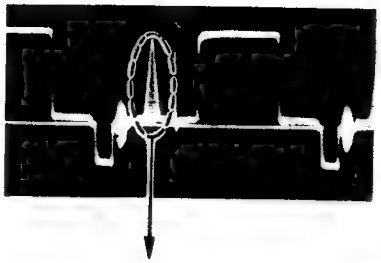
.VIDEO LINE IN;Sin^2 wave signal.
.Self Record then play back mode.

Check point; TP5/YC-3

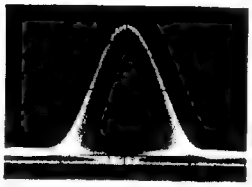
Trig; TP9/YC-3

Spec;

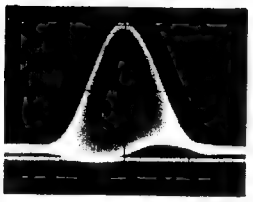
TP5/YC-3



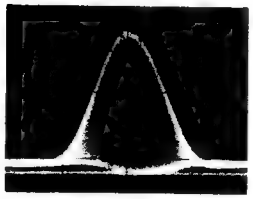
GOOD



NG



NG



Adj; DL1/YC-3

Repeat the sequence of
Adj--Record--Playback(waveform check)
until required specification is met.

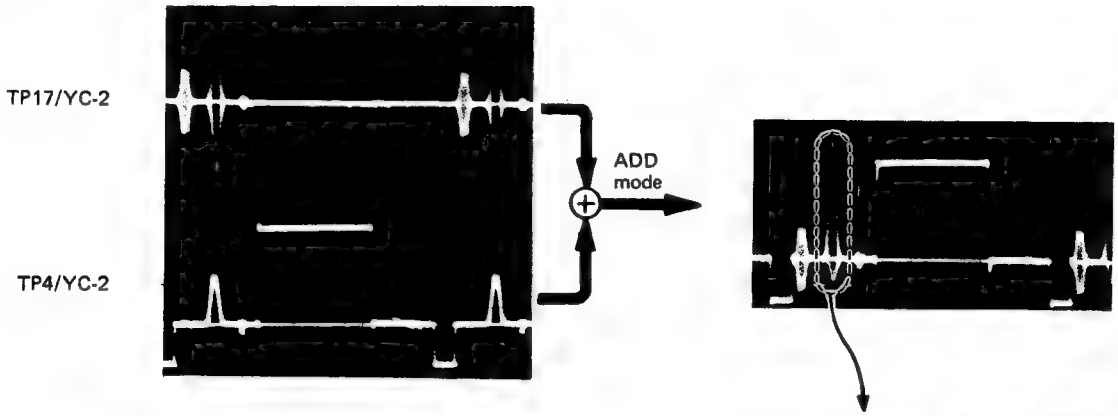
11-6-3. DUB Y/C Delay Time Adjustment

.Playing back the MOD.20T pulse segment of Alignment Tape RR5-2SC PAL.

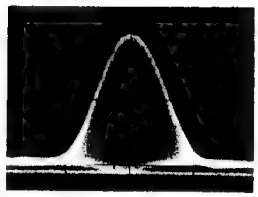
Check point;TP8 and TP17/YC-3

Trig; TP9/YC-3

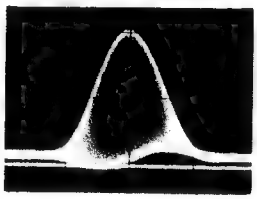
Spec;



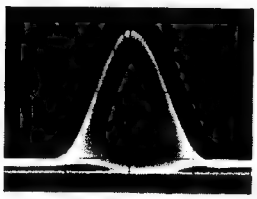
1. Y and chroma signals are in phase.



2. Chroma signal is advanced.



3. Chroma signal is delayed.

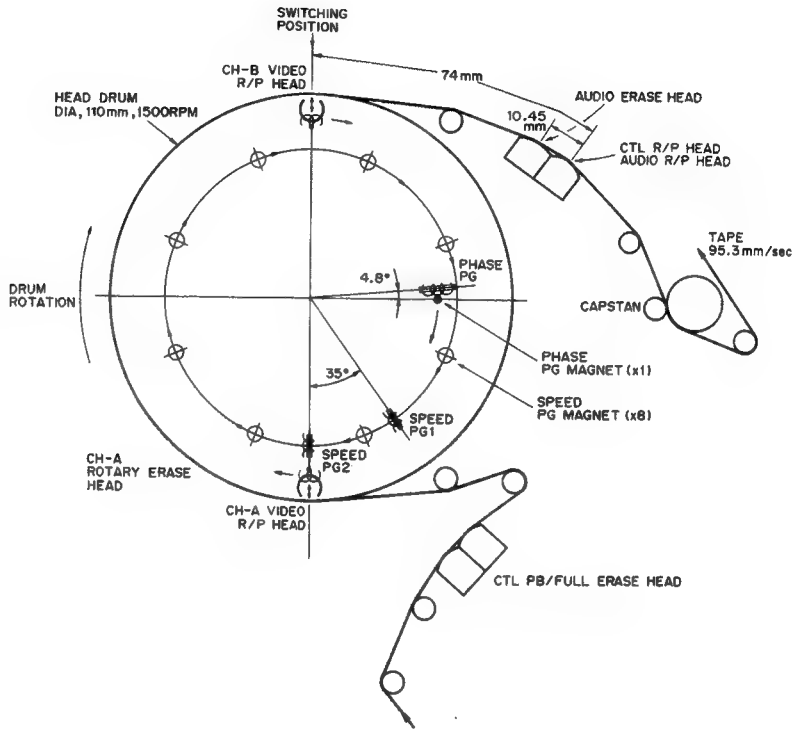


Adj; DL2/YC-3

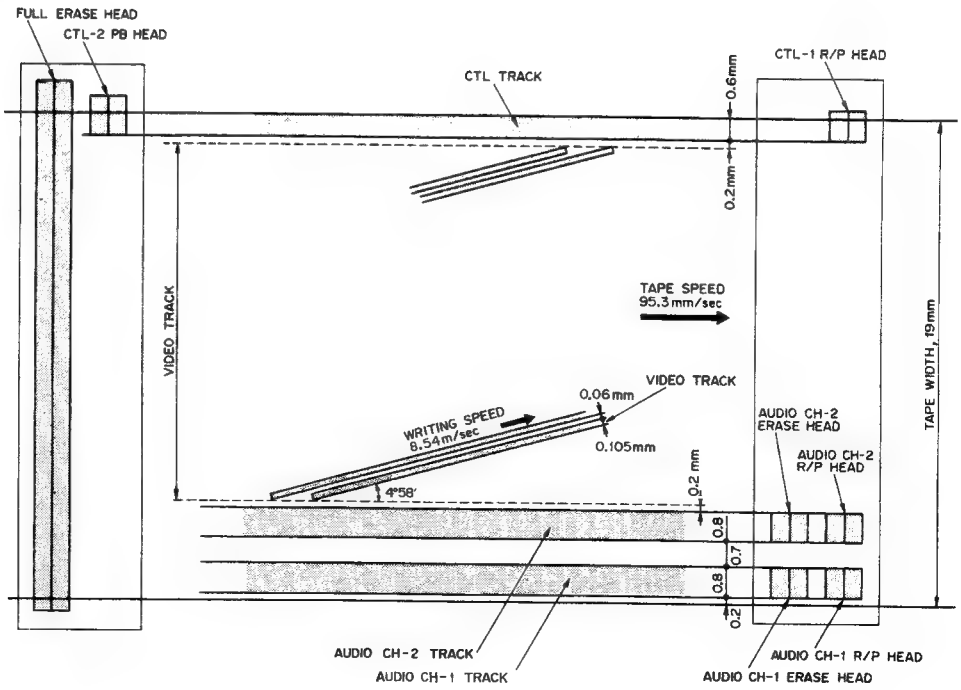
.Select the suitable tap according to short any taps of DL2/YC-3 board so that the waveform meets the photo 1.
.Solder the printed foil pattern so that the chroma delay time is delayed 0.1 micro sec.
*Each one tap is 0.1 micro sec. delayed.
*The photo 3 shows that the chroma signal is delayed from the photo 1.

SECTION 12
BLOCK DIAGRAM AND TIMING CHARTS

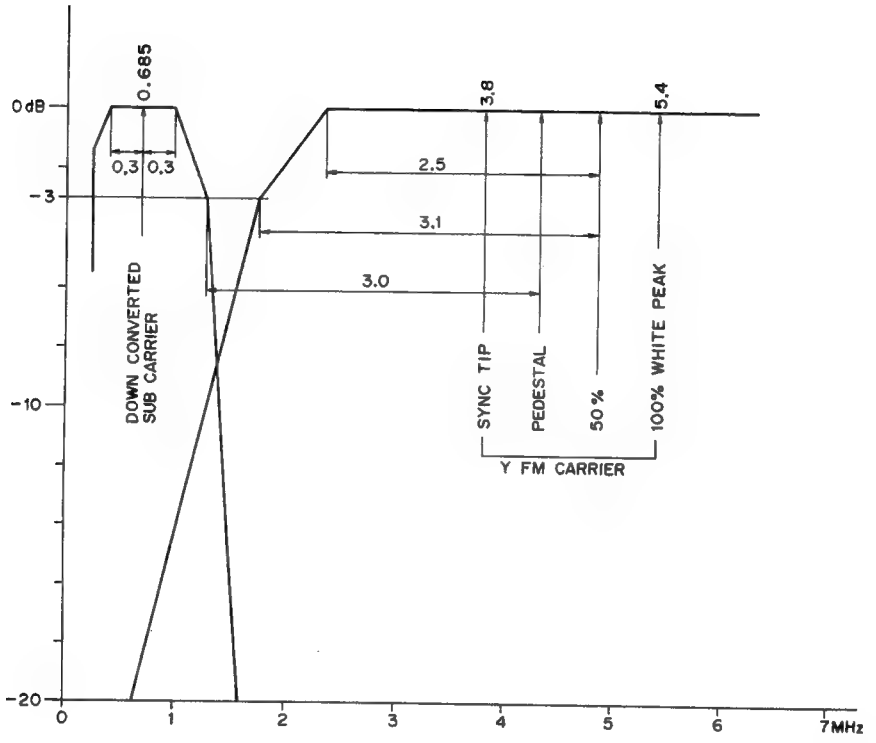
HEAD LOCATION



TAPE PATTERN



FREQUENCY ALLOCATION



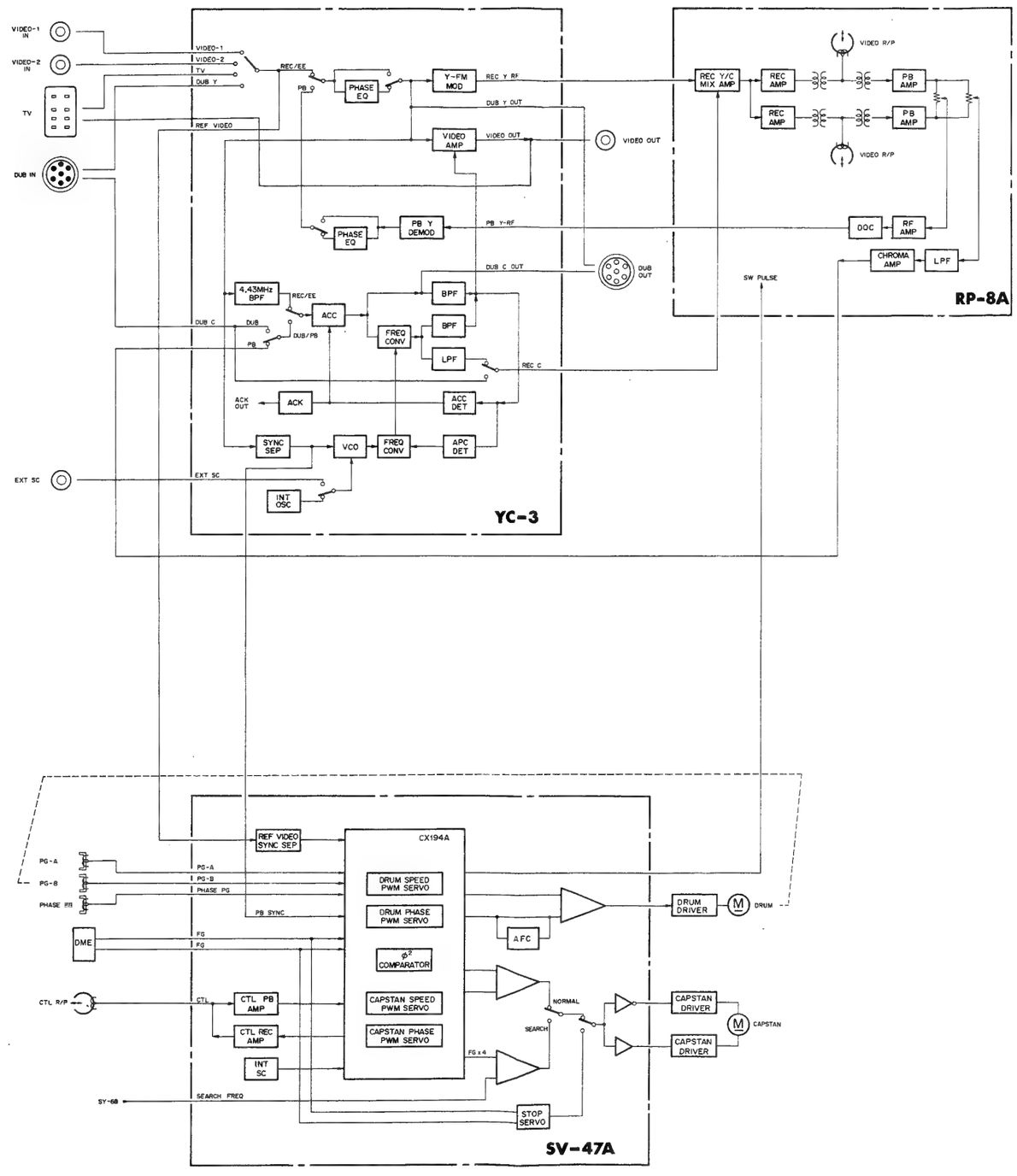
CIRCUIT FUNCTION OVERALL

CIRCUIT FUNCTION OF THE PRINTED CIRCUIT BOARD

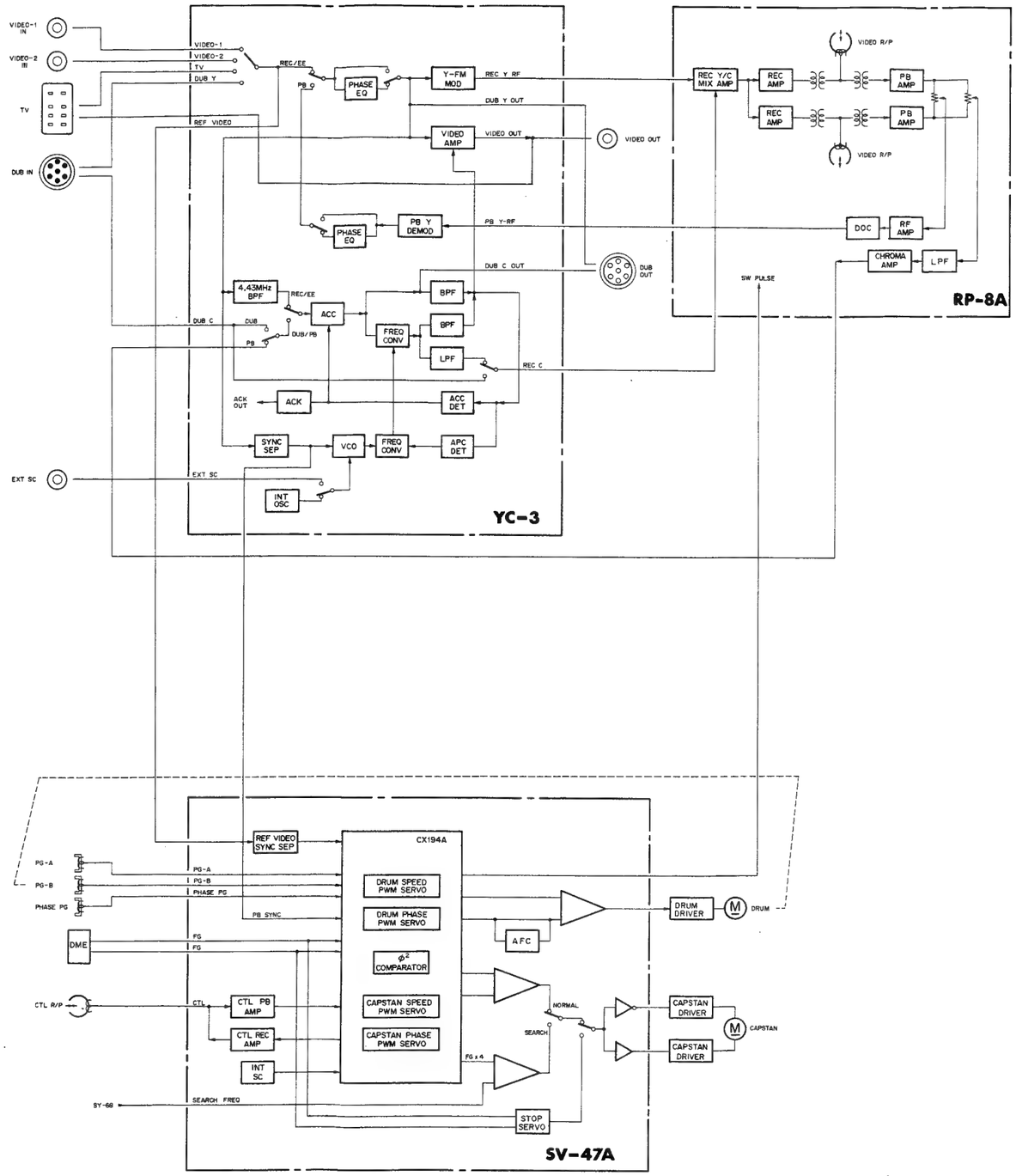
The Circuit Board Information is Provided Below

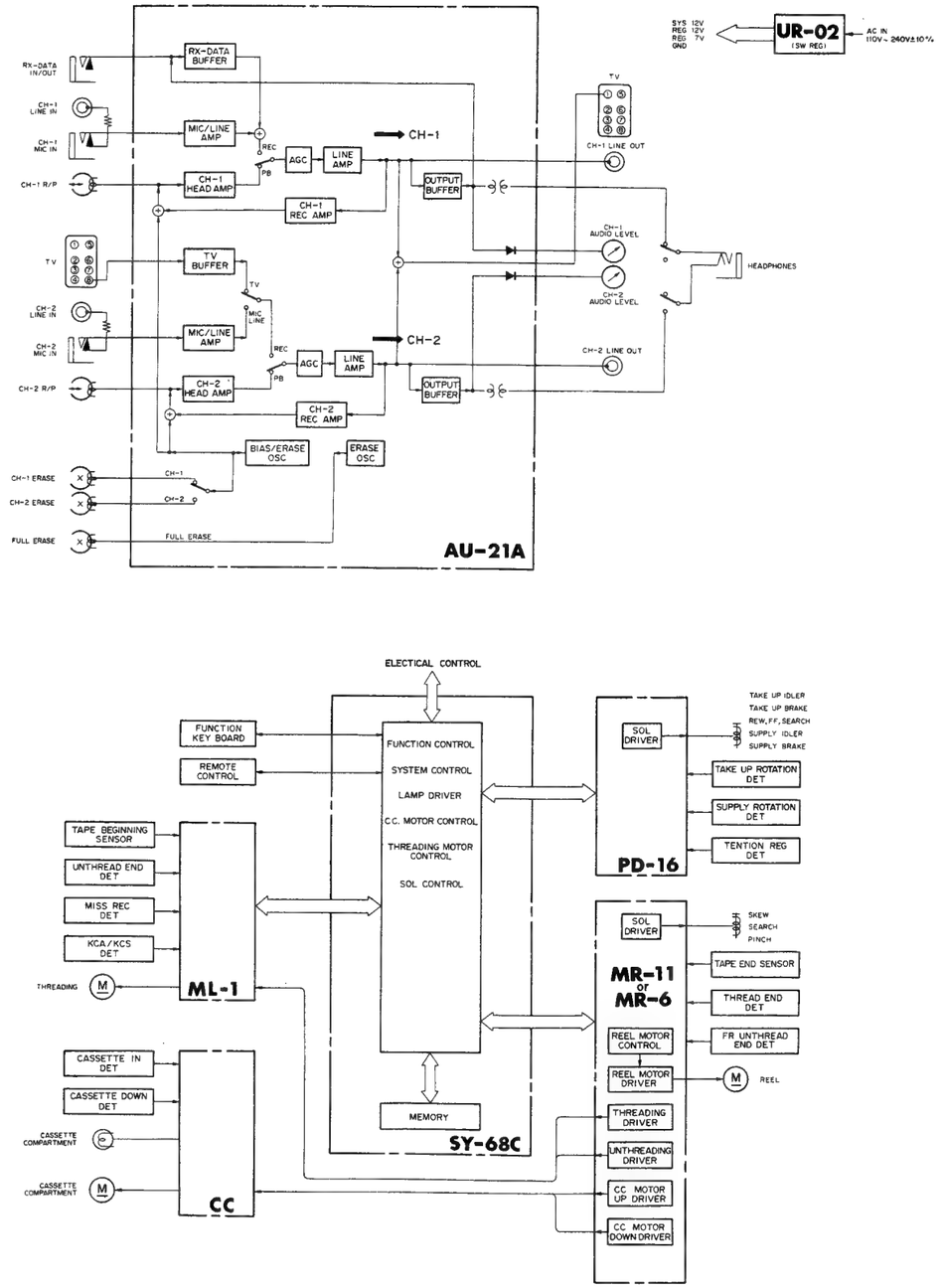
SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	YC-3	• Luminance and Chrominance Signal Modulator/Demodulator
	RP-8A	• REC/PB Amplifier
AUDIO	AU-21A	• Audio REC/PB Amplifier • Bias/Erase Oscillator
	MI-3	• CH-1/CH-2 Mic Input
	HP-3	• Headphones Level Control/Headphones Jack
	EC-19	• Full Erase/CTL PB Head
	AH-3	• Audio REC/PB Erase and CTL REC/PB Head
	MC-14	• Audio/Meter/Level Control and Tracking Control
SERVO	SV-47A	• Drum/Capstan Speed and Phase PWM Servo • CTL REC/PB Amplifier
	MR-6 MR-11	• Threading/Cassette Compartment Motor Driver • Skew/Search/Pinch Solenoid Driver • Reel Motor Control and Driver
	DC-10E	• Drum/Capstan Motor Driver • DME Shaper
	PT-9 (B)	• Reel Motor Power Driver
POWER SUPPLY	AC-27	• AC Input
	AC-36	• Power Line Filter
	UR-02	• Switching Regulator
	DC-10E	• Power Supply
	AC-35	• AC Input/Power Line Filter
SYSTEM CONTROL	FR-11	• Threading Ring Mechanical Position Detector
	PH-4	• Tenreg Detector
	PH-5	• Tape End Sensor/Tape Beginning Sensor
	KY-13B	• Function Key Board • Display Driver • Mode/Input/Monitor Select
	DP-10	• Display
	PD-16	• Take up Idler/Brake and Supply Idler/Brake REW FF Search Solenoid Driver
	SW-43	• Take up Reel Rotation Detector • Supply Reel Rotation Detector
	ML-1	• Hours Meter
	LM-7	• Threading Motor
	SW-46	• Miss REC Detector • KCA/KCS Detector
	SW-50	• Unthread End Detector
	CC-9	• Cassette Compartment Motor/Pilot Lamp
	CC-10	• Cassette in Detector
	CC-11	• Cassette Down Detector
	SY-68C	• System Control Micro Processor
	PT-9 (C)	• Regulator for System Control
	BU-1	• Back Up Capacitor

OVERALL BLOCK DIAGRAM

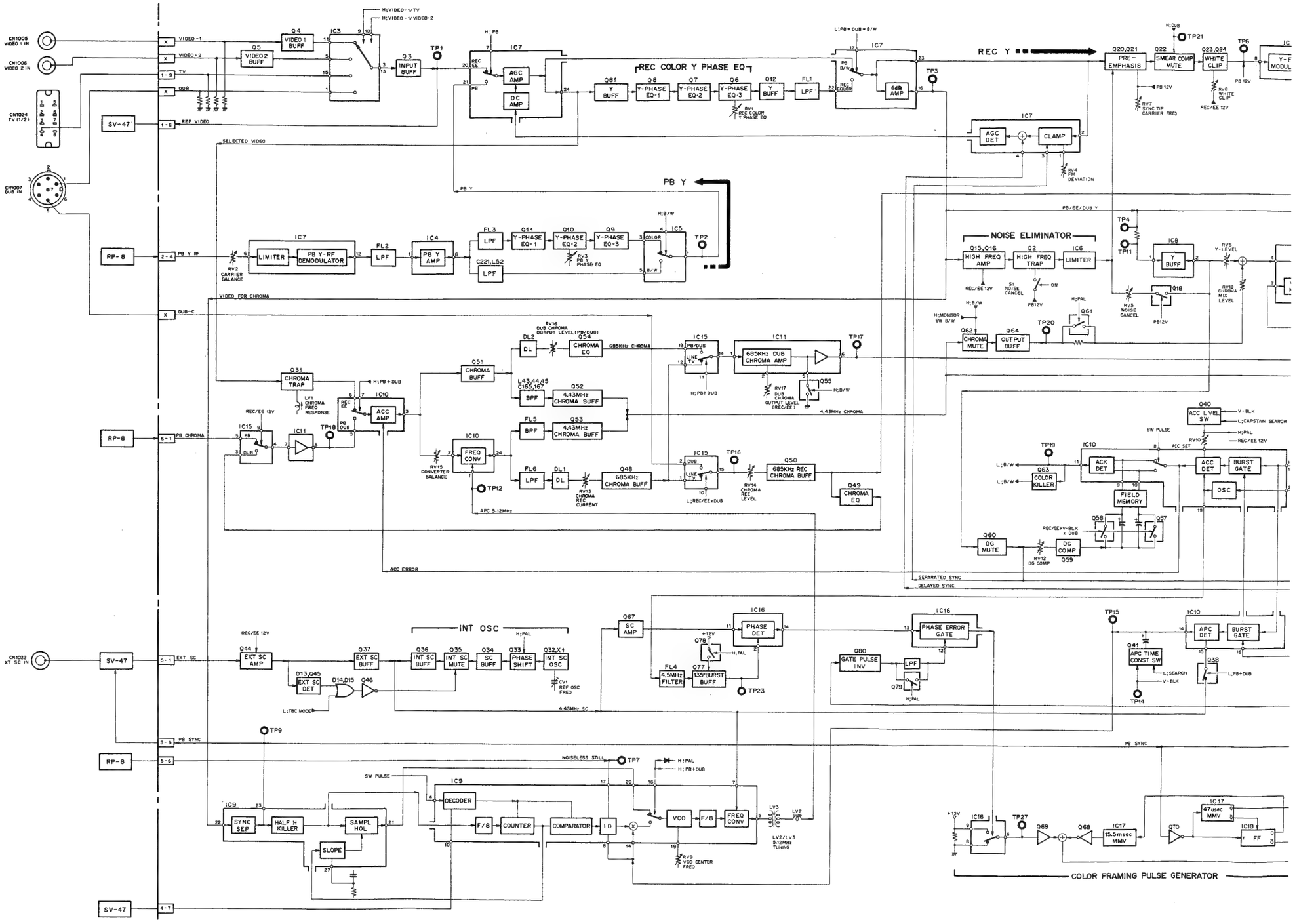


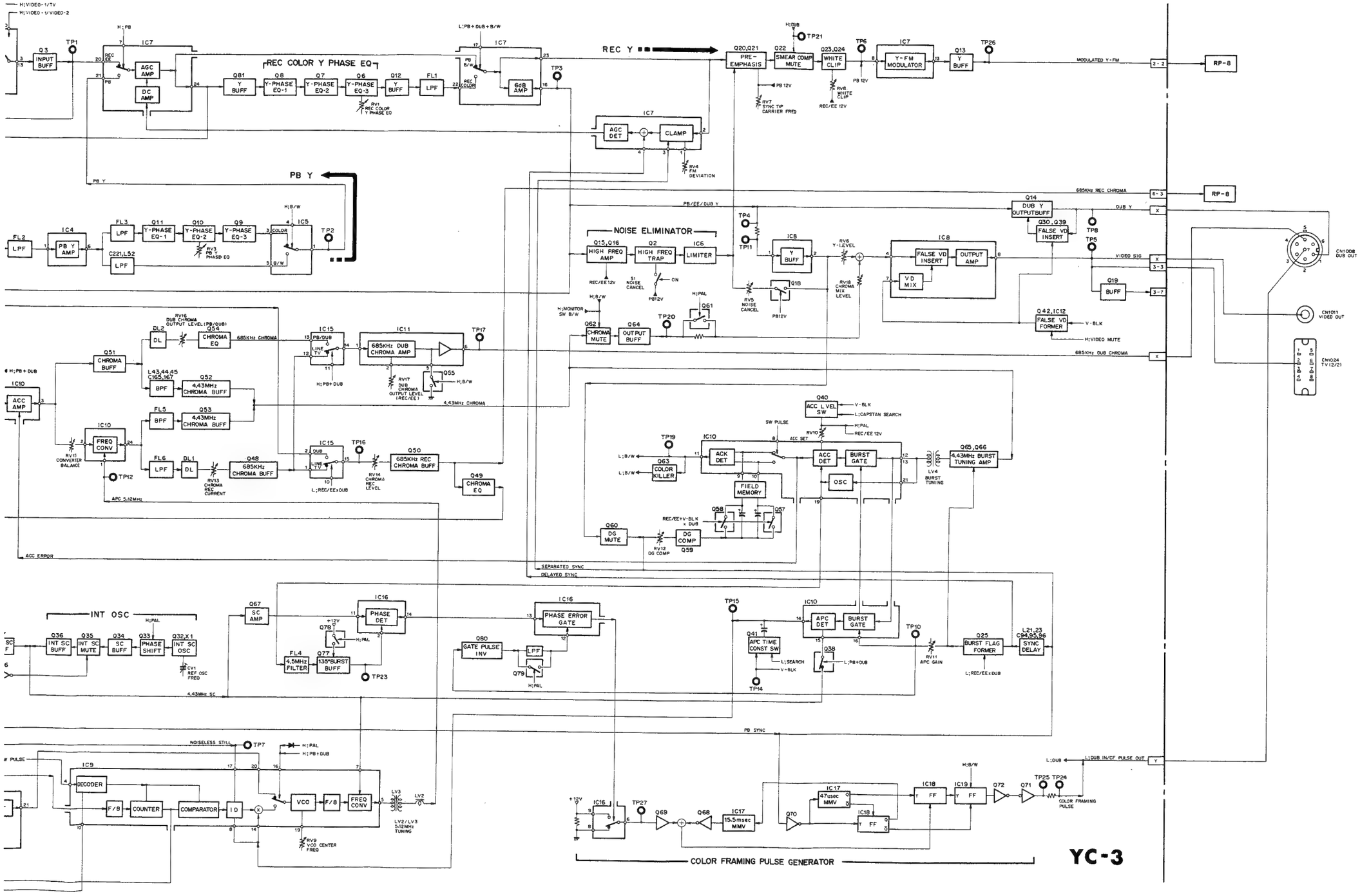
OVERALL BLOCK DIAGRAM



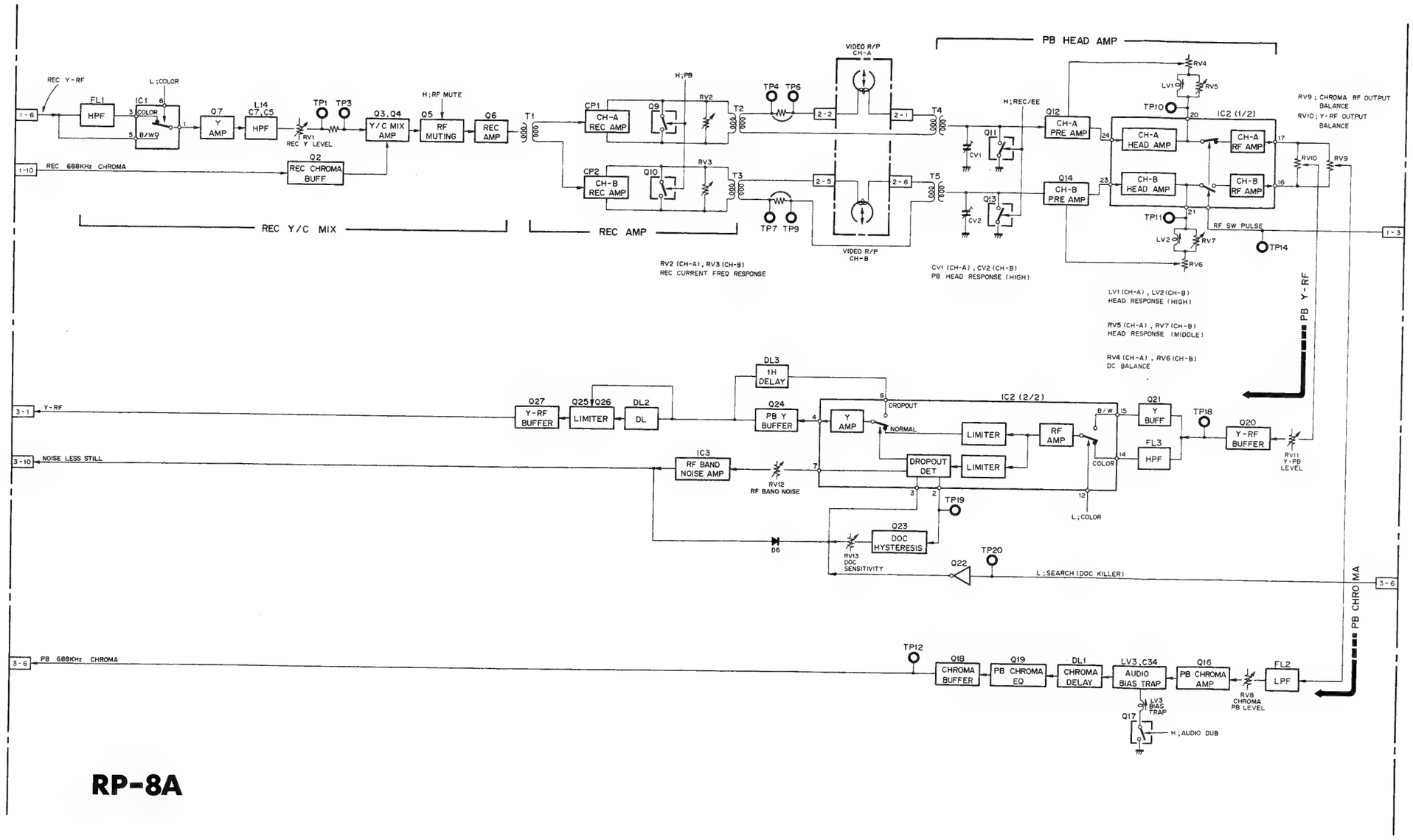


VIDEO SYSTEM BLOCK DIAGRAM




REC COLOR Y PHASE EQ
REC Y
PB Y
NOISE ELIMINATOR
INT OSC
COLOR FRAMING PULSE GENERATOR
YC-3

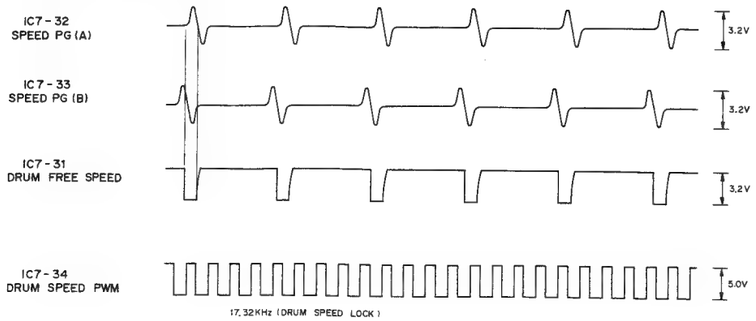
VIDEO REC/PB AMP BLOCK DIAGRAM



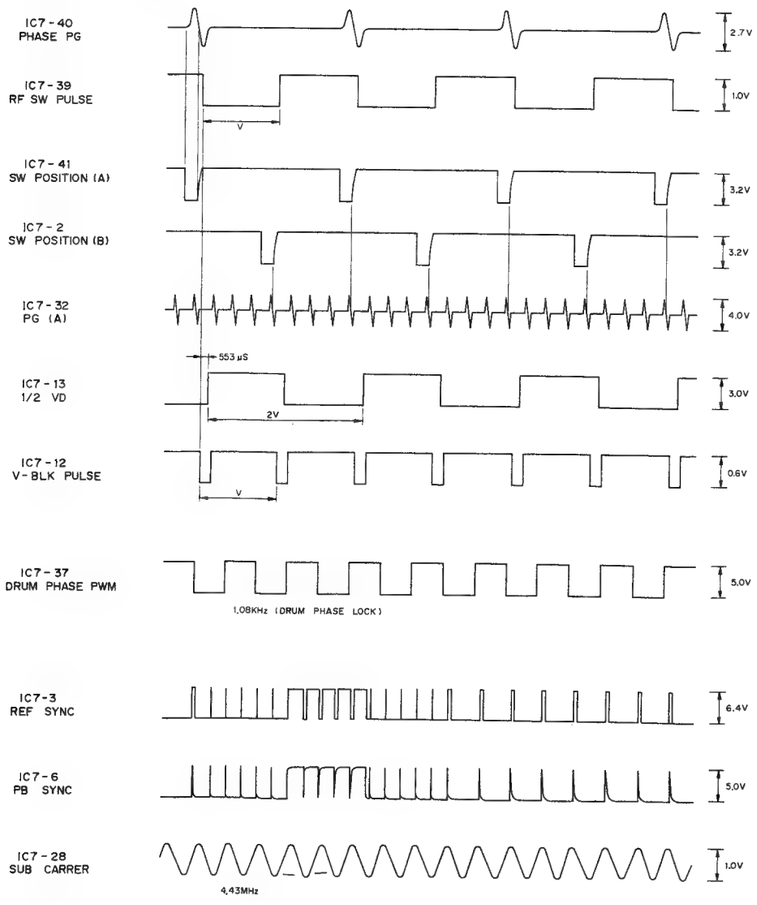
RP-8A

SERVO SYSTEM TIMING CHARTS

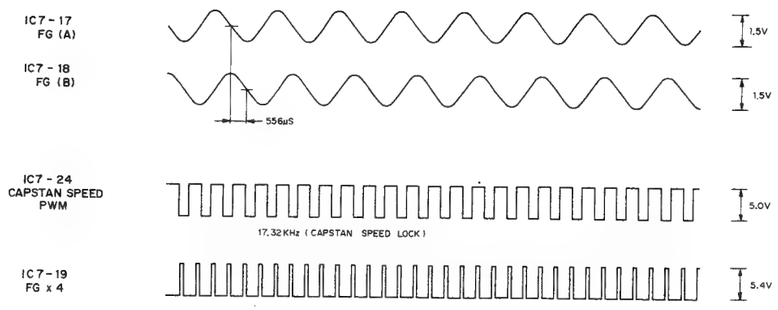
DRUM SPEED PWM SERVO



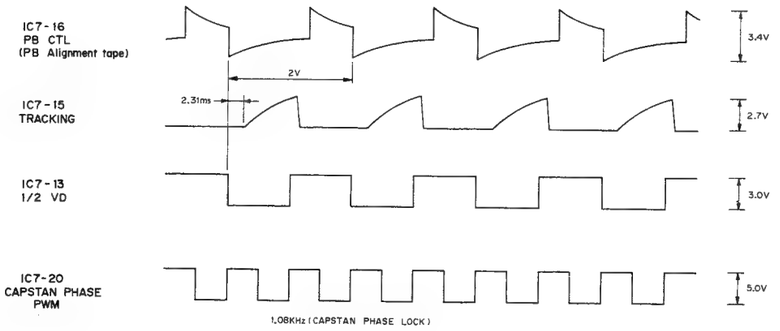
DRUM PHASE PWM SERVO



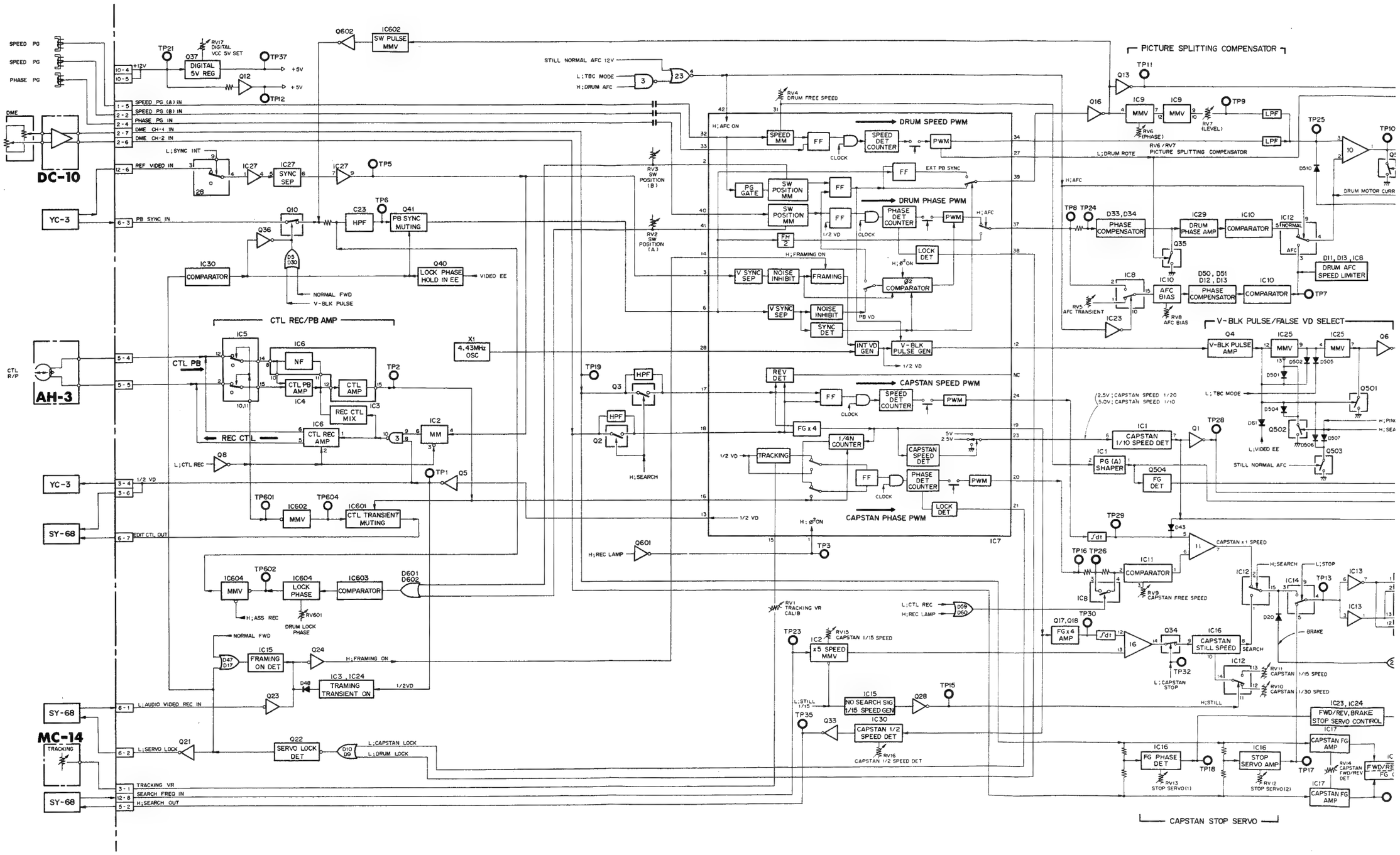
CAPSTAN SPEED PWM SERVO



CAPSTAN PHASE PWM SERVO

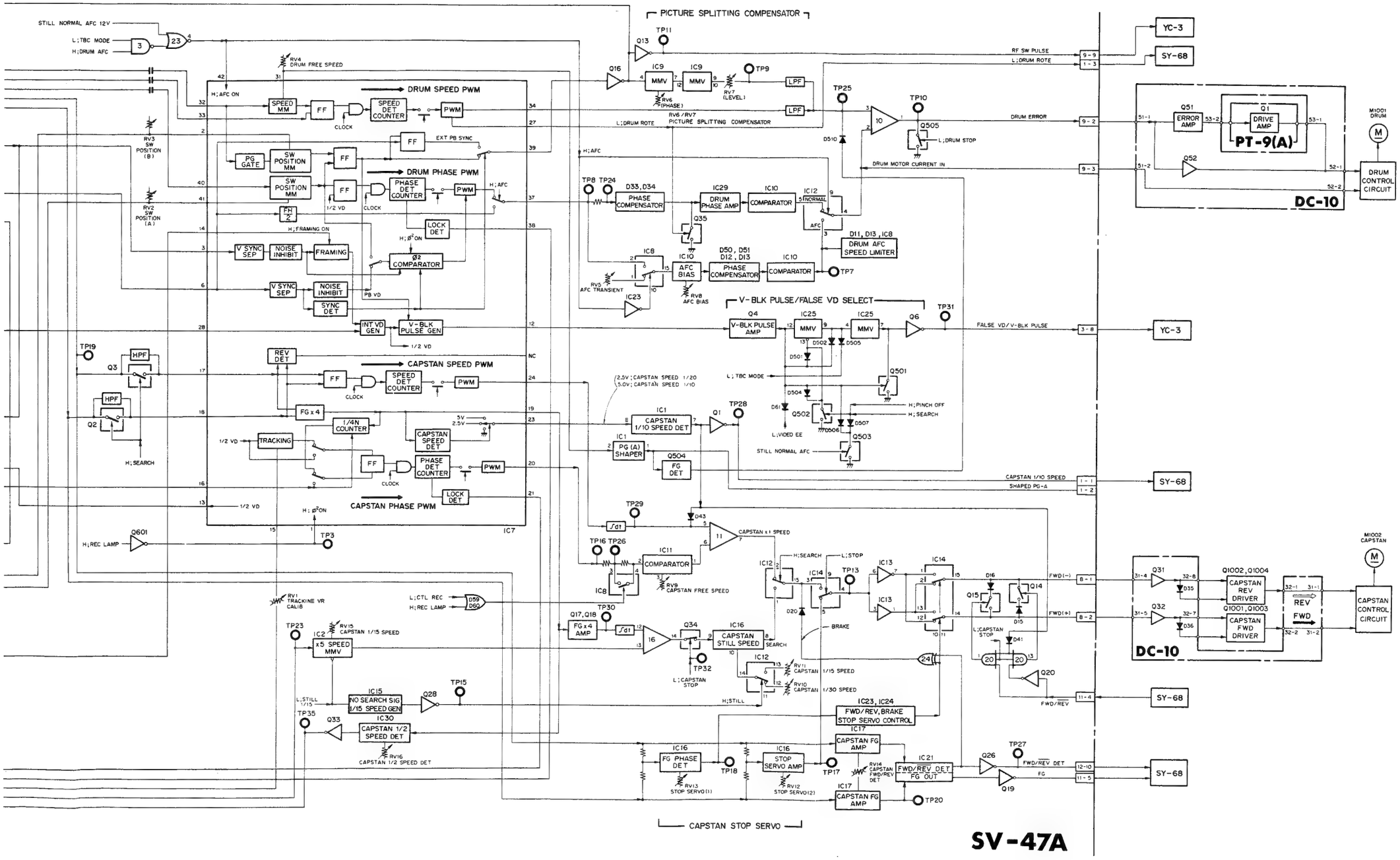


SERVO SYSTEM BLOCK DIAGRAM

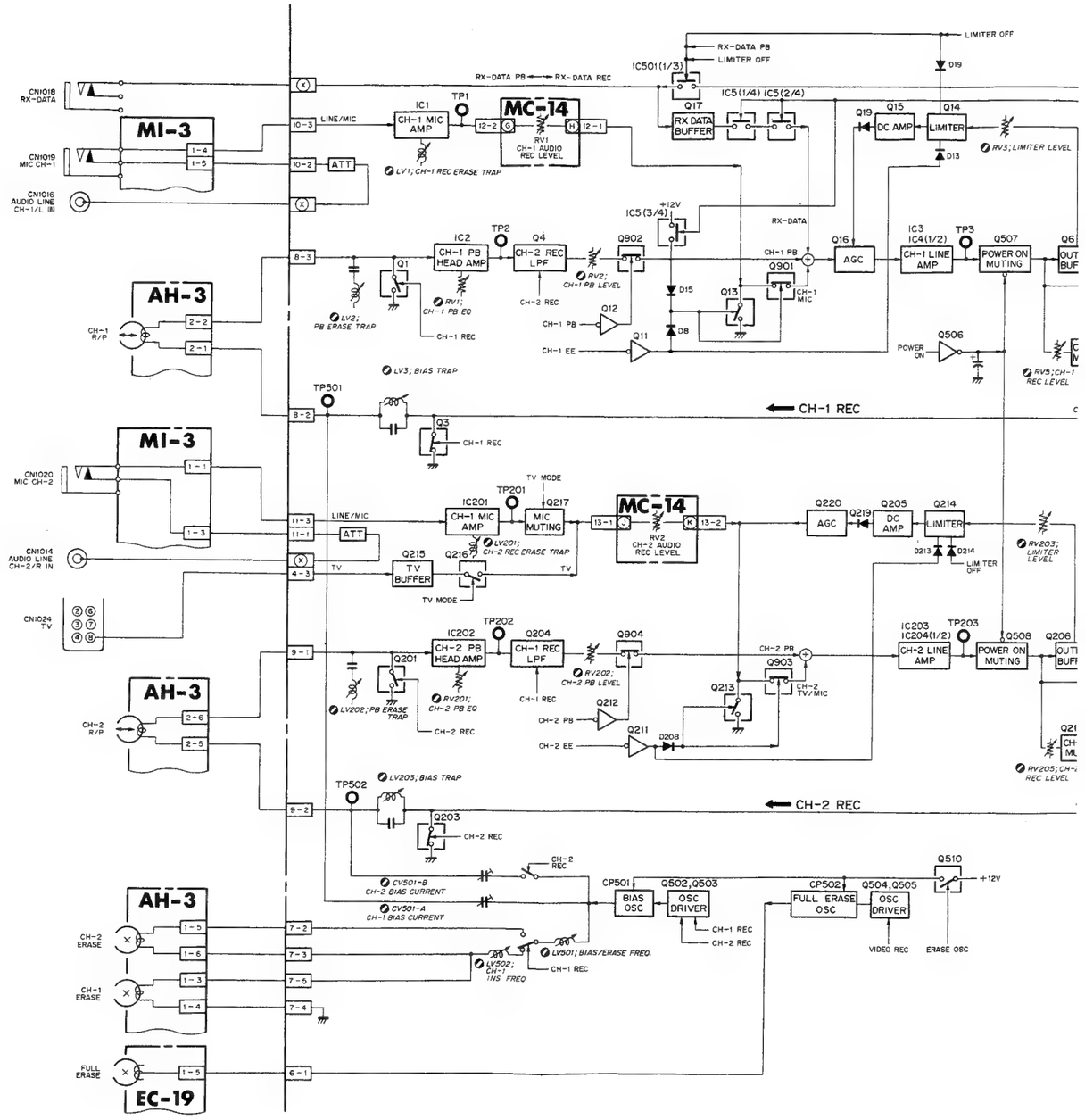


12-13

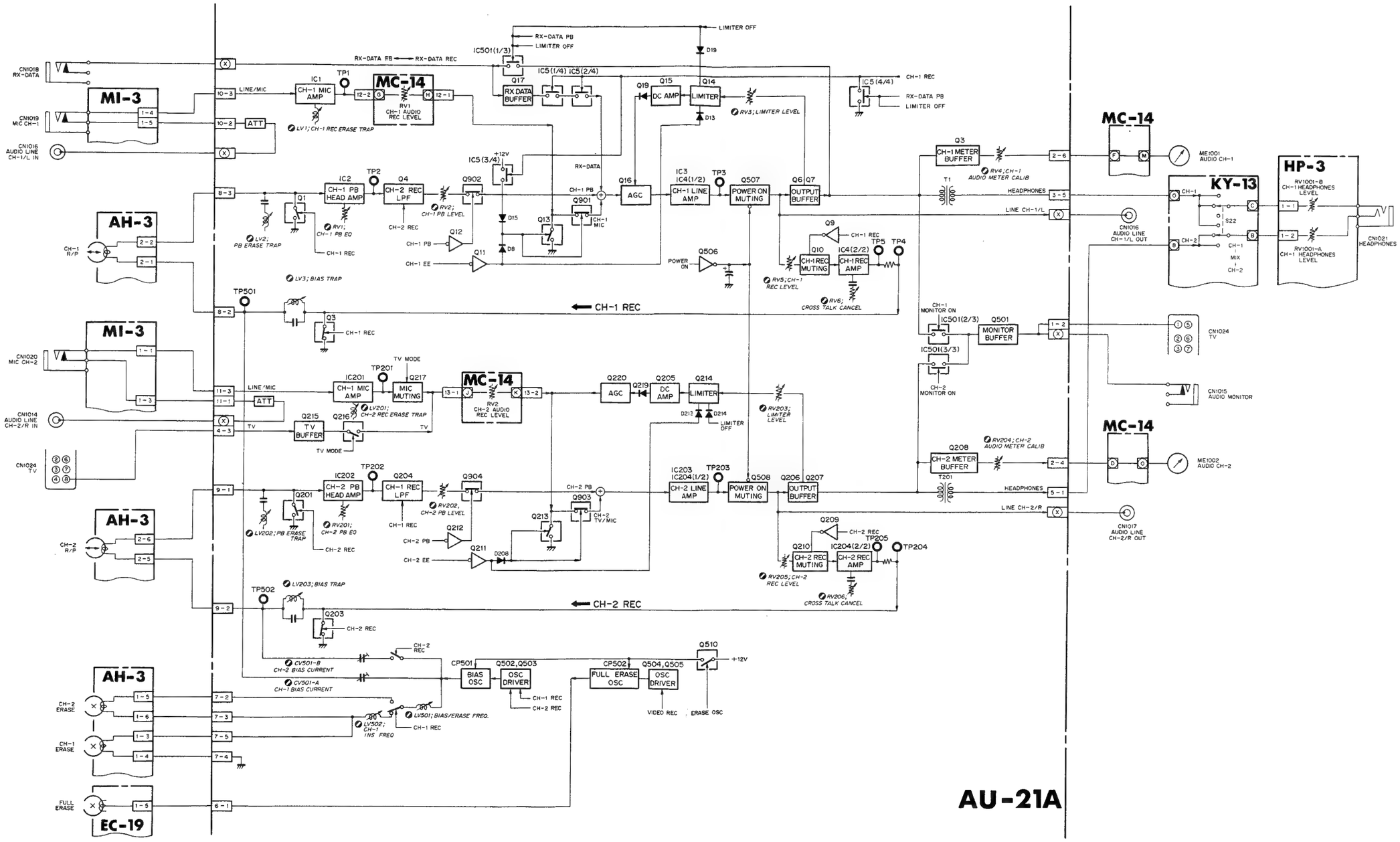
12-14


STILL NORMAL AFC 12V
L;TBC MODE
H;DRUM AFC
H;AFC ON
RV4 DRUM FREE SPEED
DRUM SPEED PWM
SPEED MM
FF
SPEED DET COUNTER
PWM
CLOCK
EXT PB SYNC
RV3 SW POSITION (B)
RV2 SW POSITION (A)
PG GATE
SW POSITION MM
DRUM PHASE PWM
PHASE DET COUNTER
1/2 VD
FH/2
H;FRAMING ON
LOCK DET
H;Ø2ON
V SYNC SEP
NOISE INHIBIT
FRAMING
Ø2 COMPARATOR
SYNC DET
PB VD
INT VD GEN
V-BLK PULSE GEN
REV DET
CAPSTAN SPEED PWM
FG x 4
1/4N COUNTER
TRACKING
CAPSTAN SPEED DET
PHASE DET COUNTER
CAPSTAN PHASE PWM
H;SEARCH
H;REC LAMP
Q601
TP3
IC7
RV1 TRACKING VR CALIB
L;CTL REC
H;REC LAMP
D59
D60
TP23
IC2 x5 SPEED MMV
RV15 CAPSTAN 1/15 SPEED
L;STILL 1/15
IC15 NO SEARCH SIG 1/15 SPEED GEN
Q28
TP15
TP35
Q33
IC30 CAPSTAN 1/2 SPEED DET
RV16 CAPSTAN 1/2 SPEED DET
TP19
HPF
Q3
Q2
PICTURE SPLITTING COMPENSATOR
TP11
Q13
Q16
IC9 MMV
TP9
RV6 (PHASE)
RV7 (LEVEL)
LPF
TP25
TP10
10
Q505
L;DRUM STOP
D510
RV6/RV7 PICTURE SPLITTING COMPENSATOR
L;DRUM ROTE
RF SW PULSE
L;DRUM ROTE
DRUM ERROR
DRUM MOTOR CURRENT IN
TP8 TP24
D33,D34
PHASE COMPENSATOR
IC29 DRUM PHASE AMP
IC10 COMPARATOR
IC12
Q35
IC8
IC10 AFC BIAS
D50, D51 D12, D13 PHASE COMPENSATOR
IC10 COMPARATOR
TP7
RV5 AFC TRANSIENT
RV8 AFC BIAS
IC23
D11, D13, IC8 DRUM AFC SPEED LIMITER
V-BLK PULSE/FALSE VD SELECT
Q4 V-BLK PULSE AMP
IC25 MMV
Q6
TP31
FALSE VD/V-BLK PULSE
D502
D505
D501
D504
D507
D506
Q501
Q502
Q503
H;PINCH OFF
H;SEARCH
L;VIDEO EE
STILL NORMAL AFC
IC1 CAPSTAN 1/10 SPEED DET
TP28
Q1
IC1 PG (A) SHAPER
Q504 FG DET
(2.5V; CAPSTAN SPEED 1/20
5.0V; CAPSTAN SPEED 1/10)
CAPSTAN 1/10 SPEED SHAPED PG-A
TP29
D43
CAPSTAN x1 SPEED
TP16 TP26
IC11 COMPARATOR
RV9 CAPSTAN FREE SPEED
TP13
IC13
IC14
D16
Q14
Q15
D15
D41
D20
BRAKE
L;CAPSTAN STOP
TP30
Q17, Q18 FG x4 AMP
Q34
IC16 CAPSTAN STILL SPEED
TP32
L;CAPSTAN STOP
IC12
RV11 CAPSTAN 1/15 SPEED
RV10 CAPSTAN 1/30 SPEED
H;STILL
IC23, IC24 FWD/REV, BRAKE STOP SERVO CONTROL
Q20
FWD/REV
IC17 CAPSTAN FG AMP
IC16 FG PHASE DET
RV13 STOP SERVO(1)
TP18
IC16 STOP SERVO AMP
RV12 STOP SERVO(2)
TP17
RV14 CAPSTAN FWD/REV DET
IC21 FWD/REV DET FG OUT
Q26
Q19
TP27
FWD/REV DET
FG
TP20
IC17 CAPSTAN FG AMP
CAPSTAN STOP SERVO
YC-3
SY-68
YC-3
SY-68
SY-68
SY-68
DC-10
Q51 ERROR AMP
Q1 DRIVE AMP
PT-9(A)
Q52
M1001 DRUM
DRUM CONTROL CIRCUIT
Q31
Q32
Q1002, Q1004 CAPSTAN REV DRIVER
Q1001, Q1003 CAPSTAN FWD DRIVER
REV
FWD
M1002 CAPSTAN
CAPSTAN CONTROL CIRCUIT
DC-10
SV-47A

AUDIO SYSTEM BLOCK DIAGRAM

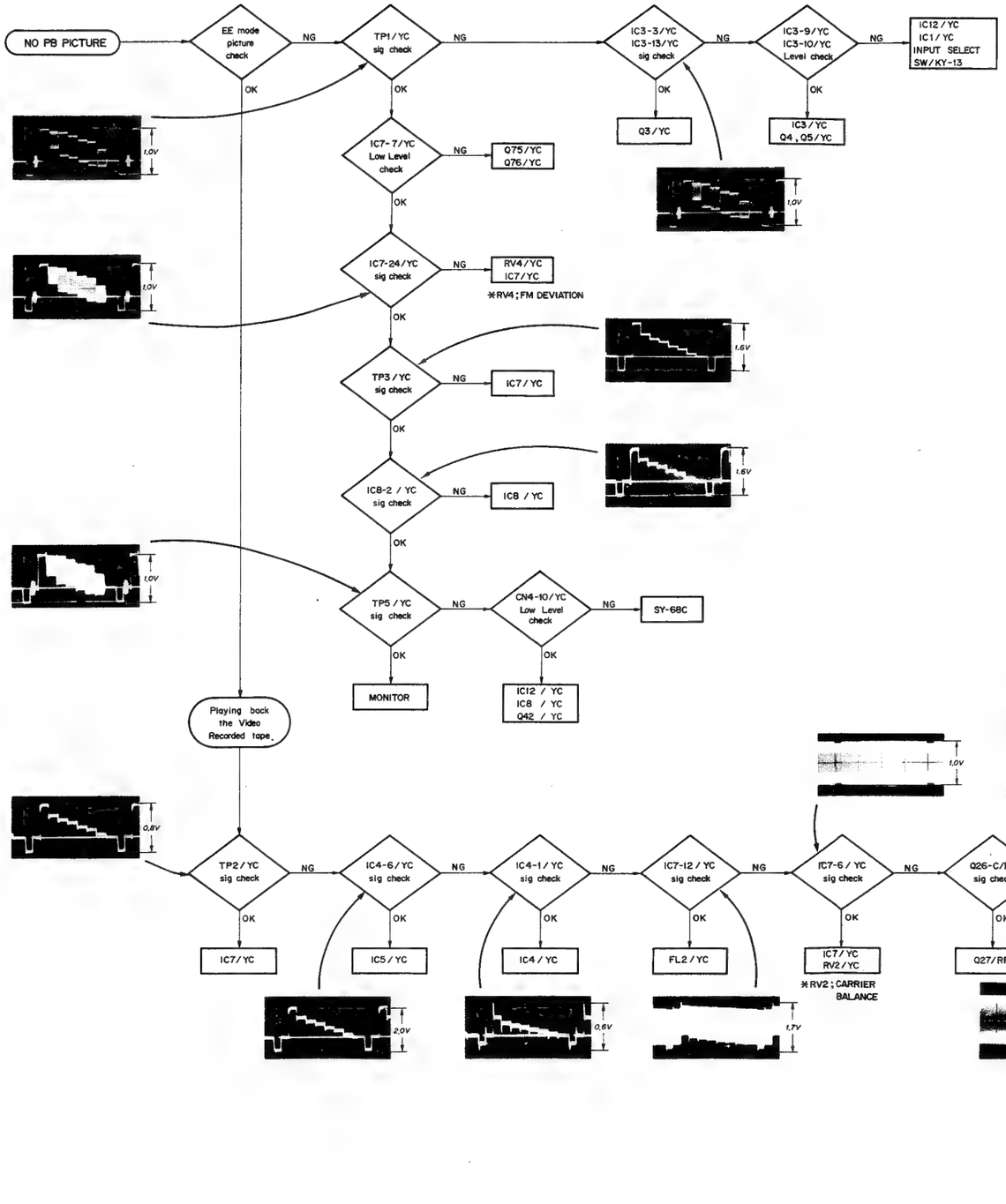


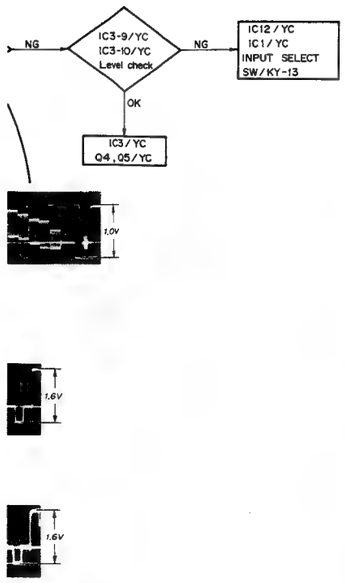
AUDIO SYSTEM BLOCK DIAGRAM

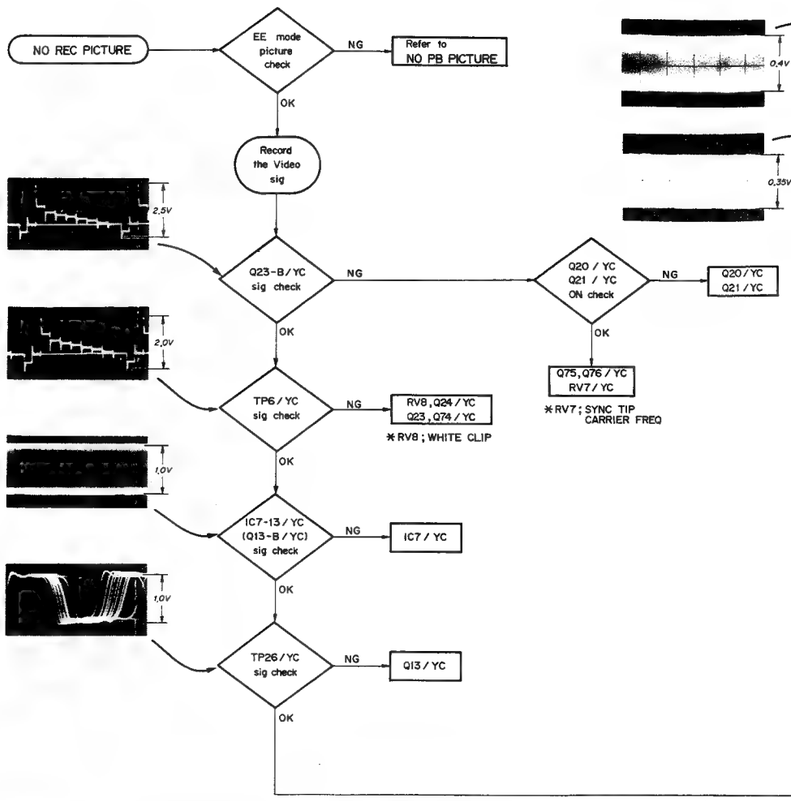


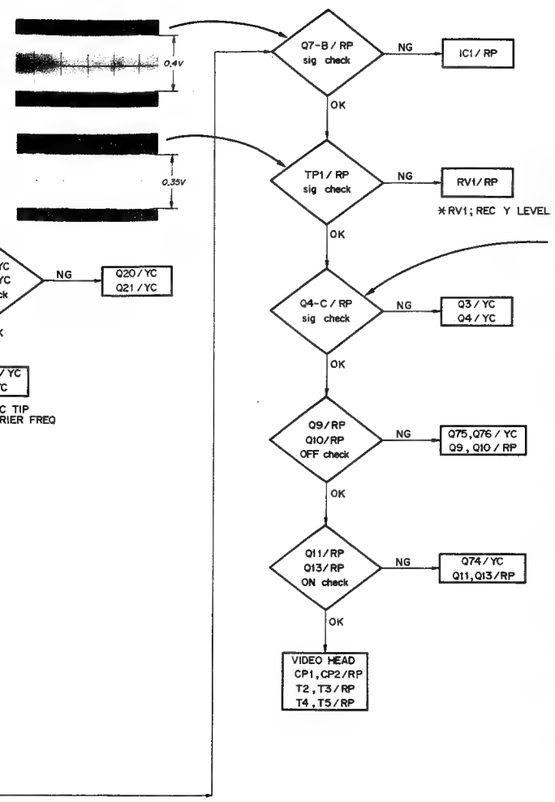
VIDEO SYSTEM FLOW CHART

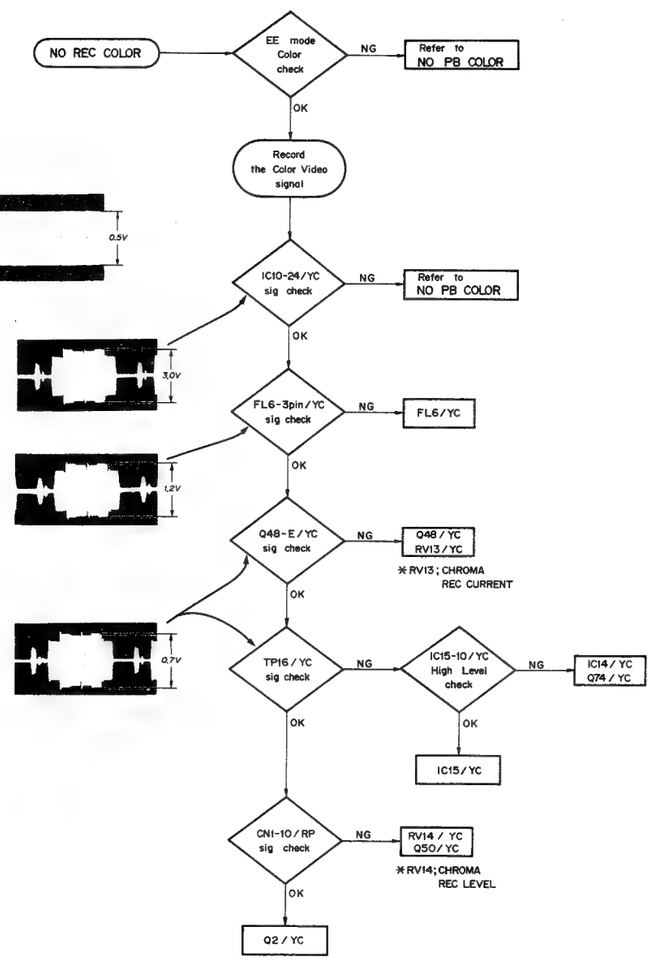
CONDITION ; CLEAN THE VIDEO HEAD
NORMAL SERVO SYSTEM

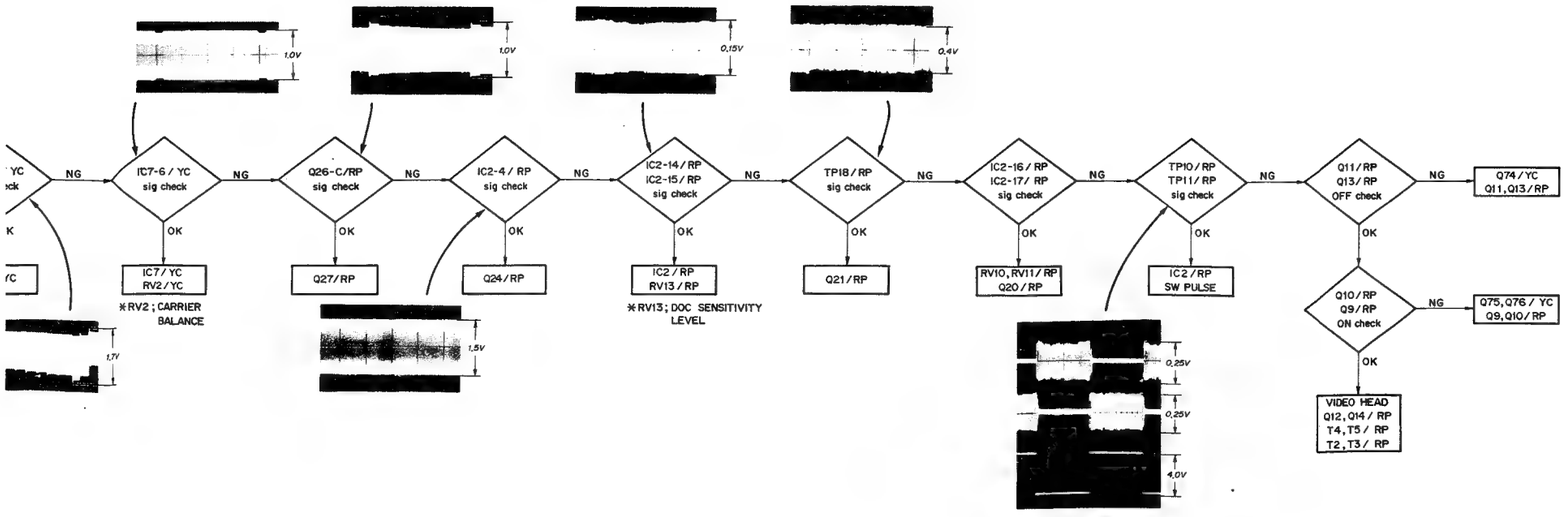



NG
IC3-9/YC
IC3-10/YC
Level check
NG
IC12/YC
IC1/YC
INPUT SELECT
SW/KY-13
OK
IC3/YC
Q4,Q5/YC
1.0V
1.6V
1.6V


NO REC PICTURE
EE mode picture check
NG
Refer to NO PB PICTURE
OK
Record the Video sig
2.5V
Q23-B/YC sig check
NG
OK
2.0V
TP6/YC sig check
NG
RV8,Q24/YC Q23,Q74/YC
*RV8; WHITE CLIP
OK
1.0V
IC7-13/YC (Q13-B/YC) sig check
NG
IC7/YC
OK
1.0V
TP26/YC sig check
NG
Q13/YC
OK
0.4V
0.35V
Q20/YC Q21/YC ON check
NG
Q20/YC Q21/YC
OK
Q75,Q76/YC RV7/YC
*RV7; SYNC TIP CARRIER FREQ

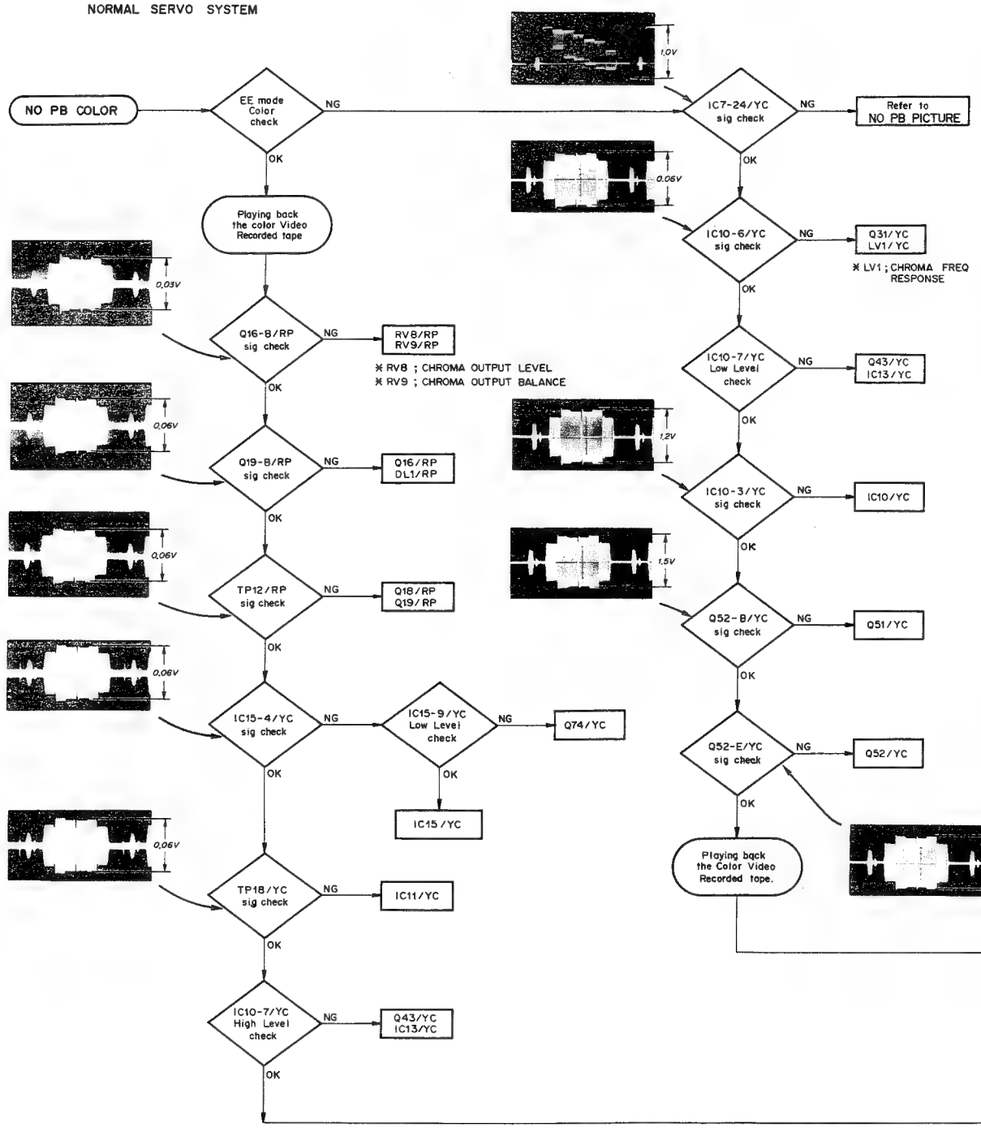

Q7-B/RP sig check
NG
IC1/RP
OK
TP1/RP sig check
NG
RV1/RP
*RV1; REC Y LEVEL
OK
0.5V
Q4-C/RP sig check
NG
Q3/YC Q4/YC
OK
Q9/RP Q10/RP OFF check
NG
Q75,Q76/YC Q9,Q10/RP
OK
Q11/RP Q13/RP ON check
NG
Q74/YC Q11,Q13/RP
OK
VIDEO HEAD CP1,CP2/RP T2,T3/RP T4,T5/RP

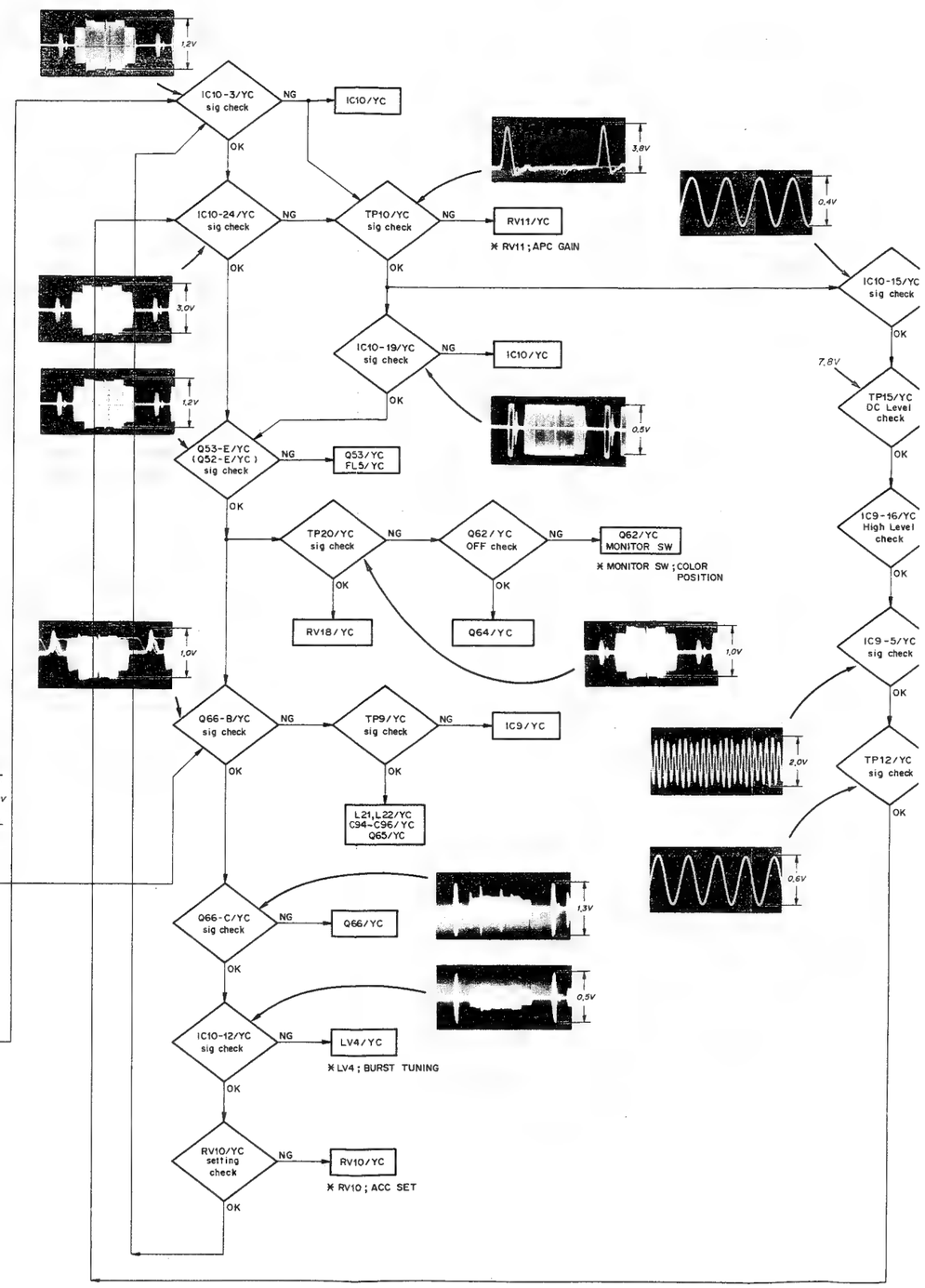

NO REC COLOR
EE mode Color check
NG
Refer to NO PB COLOR
OK
Record the Color Video signal
IC10-24/YC sig check
NG
Refer to NO PB COLOR
OK
3.0V
FL6-3pin/YC sig check
NG
FL6/YC
OK
1.2V
Q48-E/YC sig check
NG
Q48/YC RV13/YC
*RV13; CHROMA REC CURRENT
OK
0.7V
TP16/YC sig check
NG
IC15-10/YC High Level check
NG
IC14/YC Q74/YC
OK
OK
IC15/YC
CN1-10/RP sig check
NG
RV14/YC Q50/YC
*RV14; CHROMA REC LEVEL
OK
Q2/YC


1.0V
1.0V
0.15V
0.4V
NG
IC7-6/YC sig check
NG
Q26-C/RP sig check
NG
IC2-4/RP sig check
NG
IC2-14/RP IC2-15/RP sig check
NG
TP18/RP sig check
NG
IC2-16/RP IC2-17/RP sig check
NG
TP10/RP TP11/RP sig check
NG
Q11/RP Q13/RP OFF check
NG
Q74/YC Q11,Q13/RP
OK
OK
OK
OK
OK
OK
OK
OK
IC7/YC RV2/YC
*RV2; CARRIER BALANCE
Q27/RP
Q24/RP
IC2/RP RV13/RP
*RV13; DOC SENSITIVITY LEVEL
Q21/RP
RV10,RV11/RP Q20/RP
IC2/RP SW PULSE
Q10/RP Q9/RP ON check
NG
Q75,Q76/YC Q9,Q10/RP
OK
VIDEO HEAD Q12,Q14/RP T4,T5/RP T2,T3/RP
1.7V
1.5V
0.25V
0.25V
4.0V

VIDEO SYSTEM FLOW CHART

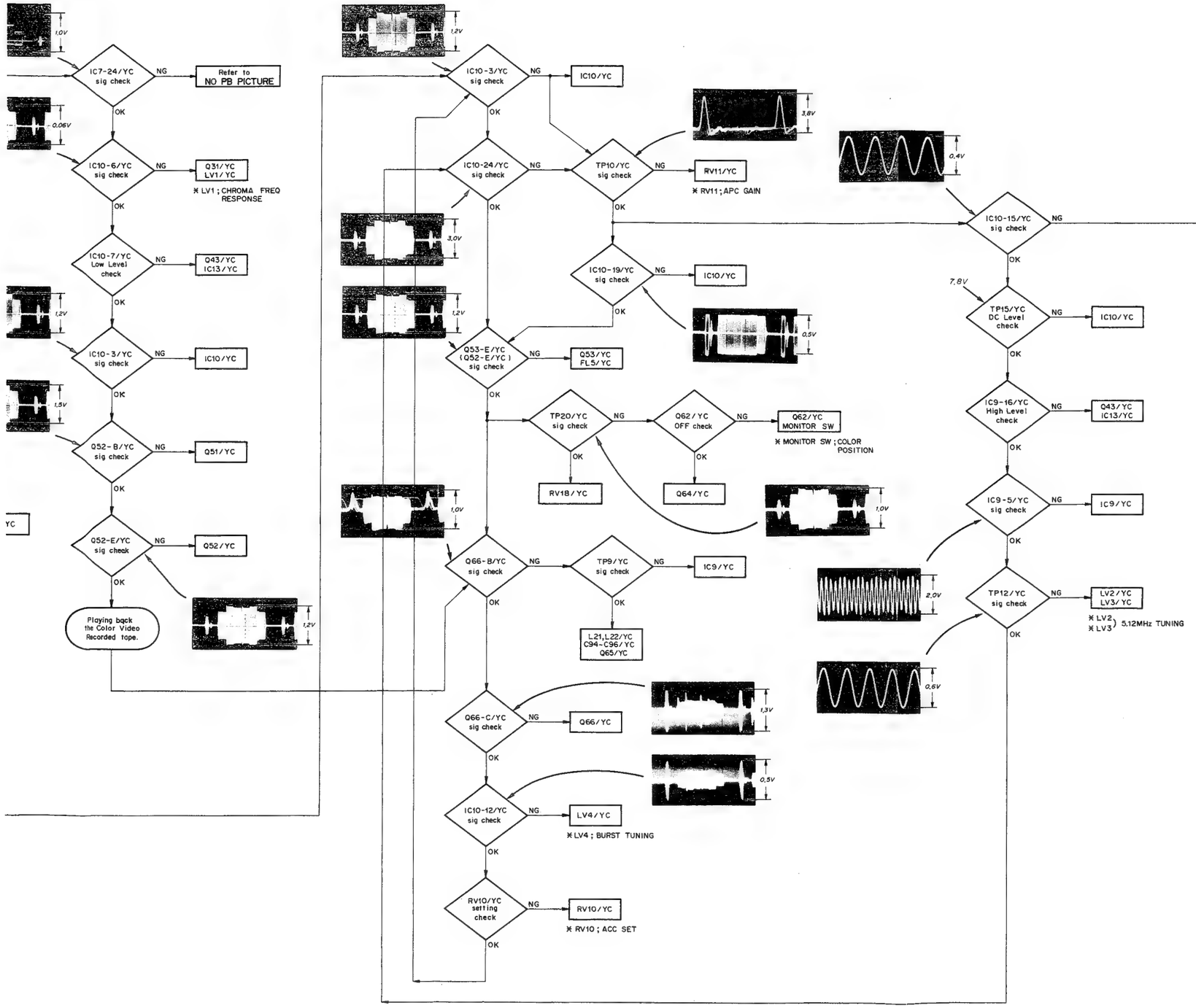
CONDITION ; CLEAN THE VIDEO HEAD
NORMAL SERVO SYSTEM





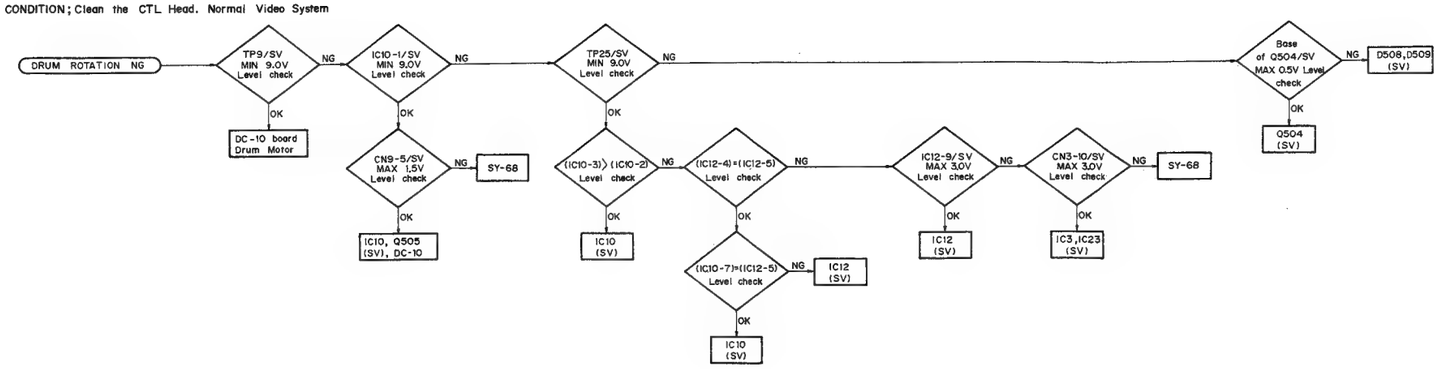
VIDEO FLOW CHART

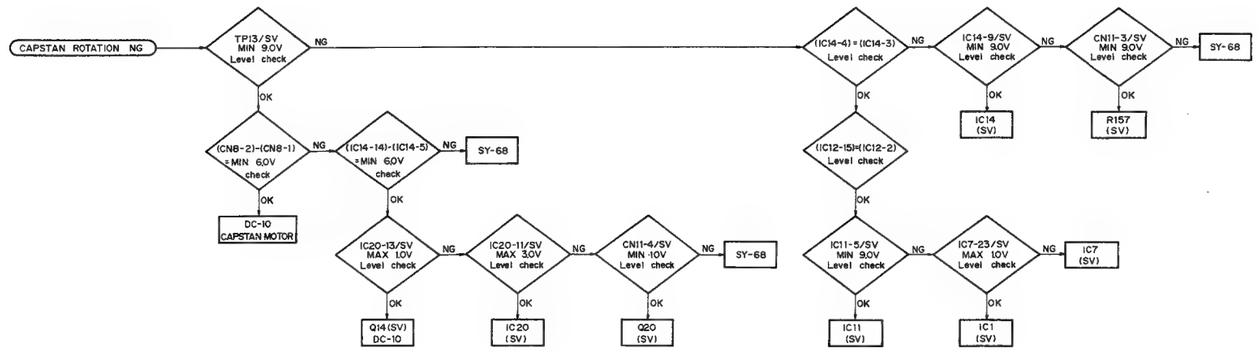
VIDEO FLOW CHART

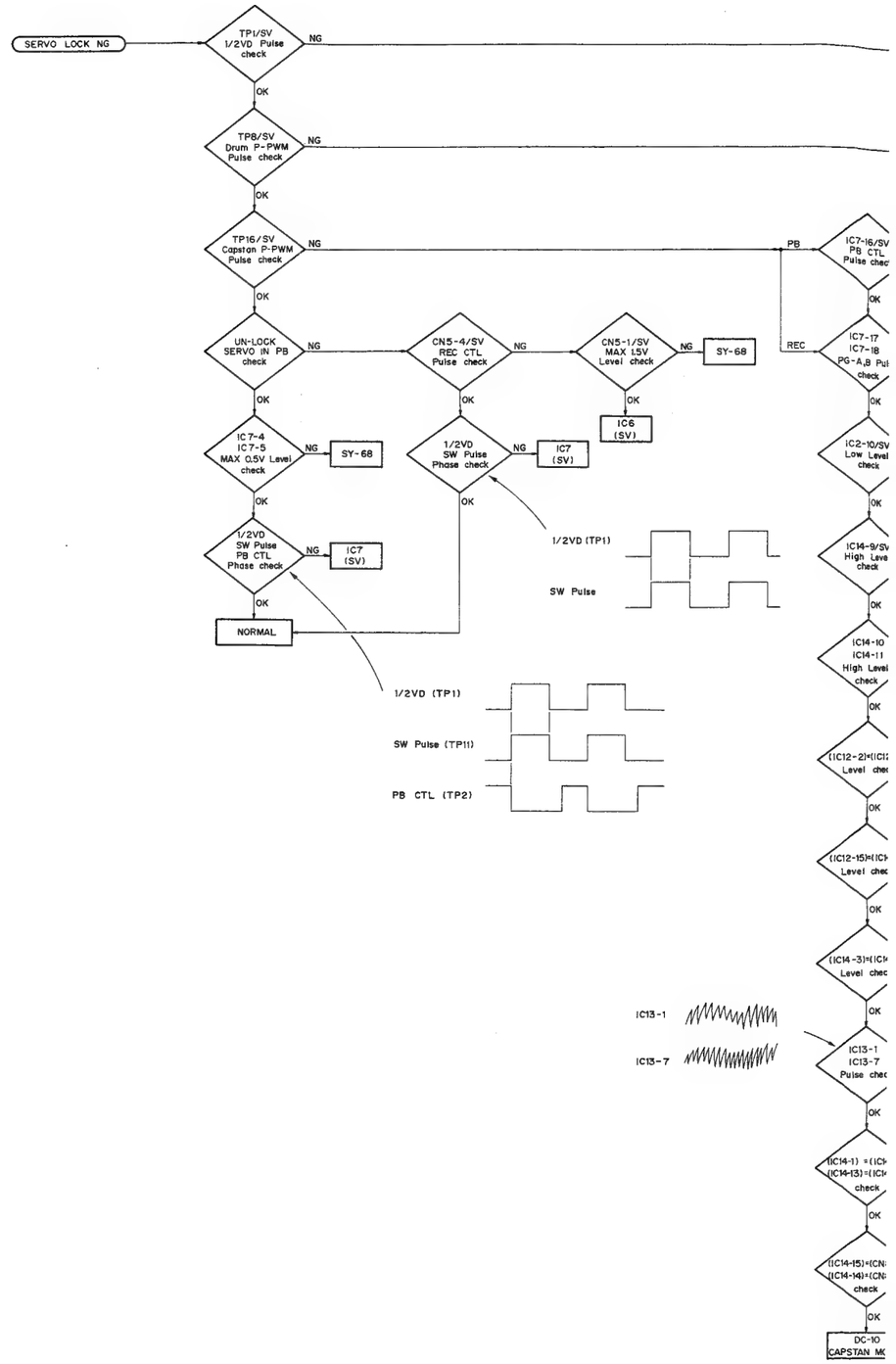


SERVO SYSTEM FLOW CHART

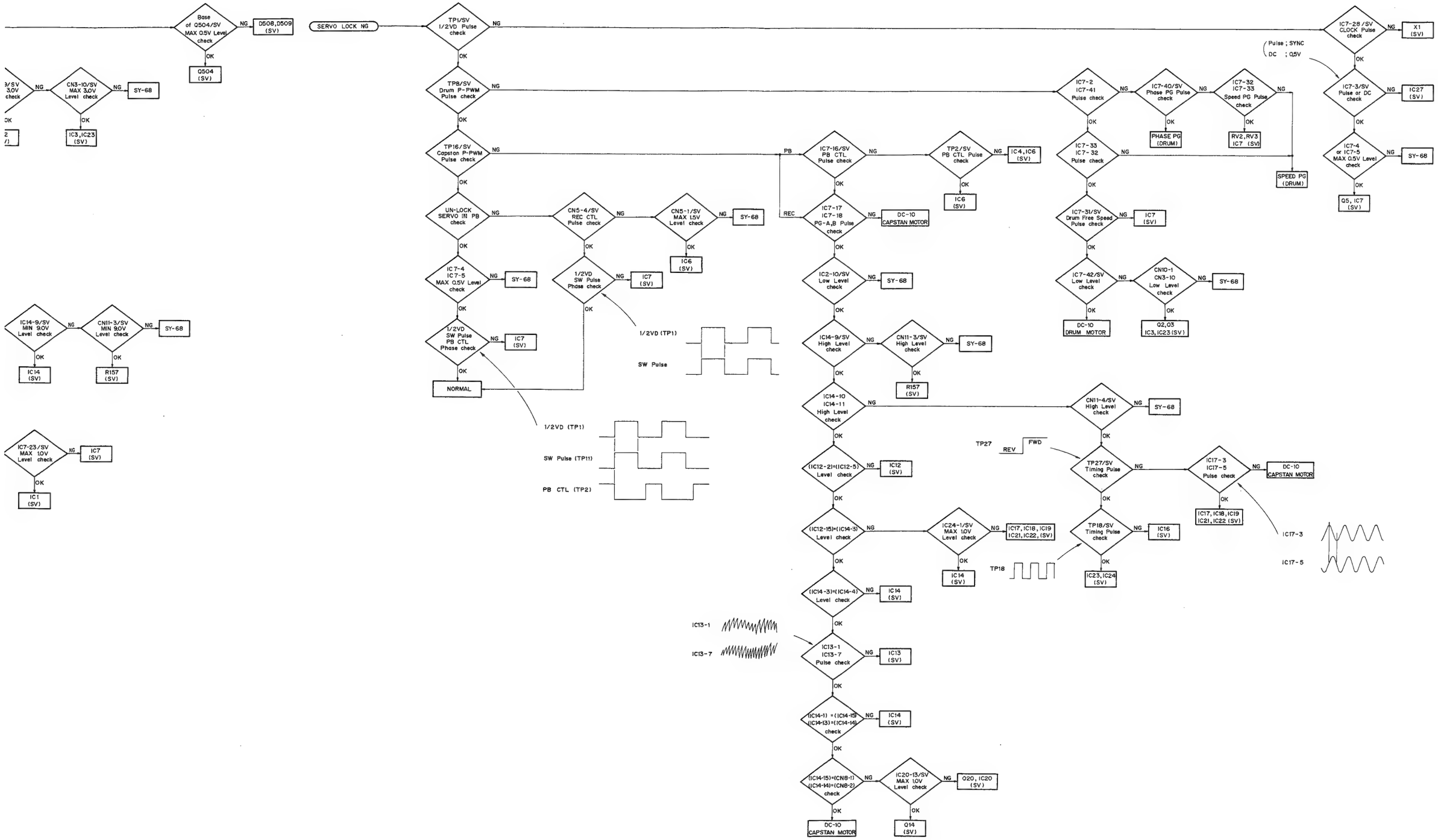
CONDITION; Clean the CTL Head. Normal Video System







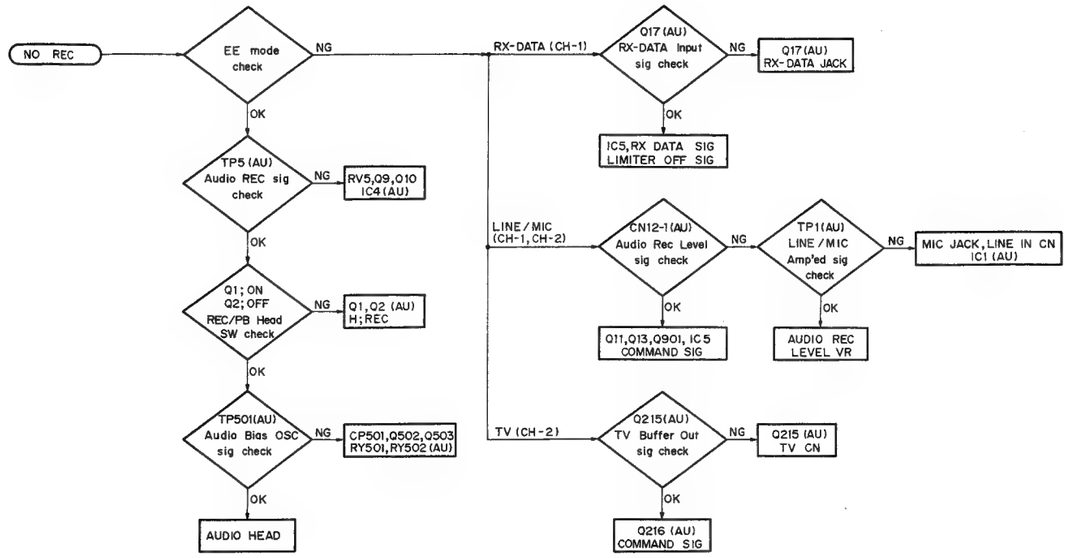
SERVO FLOW CHART

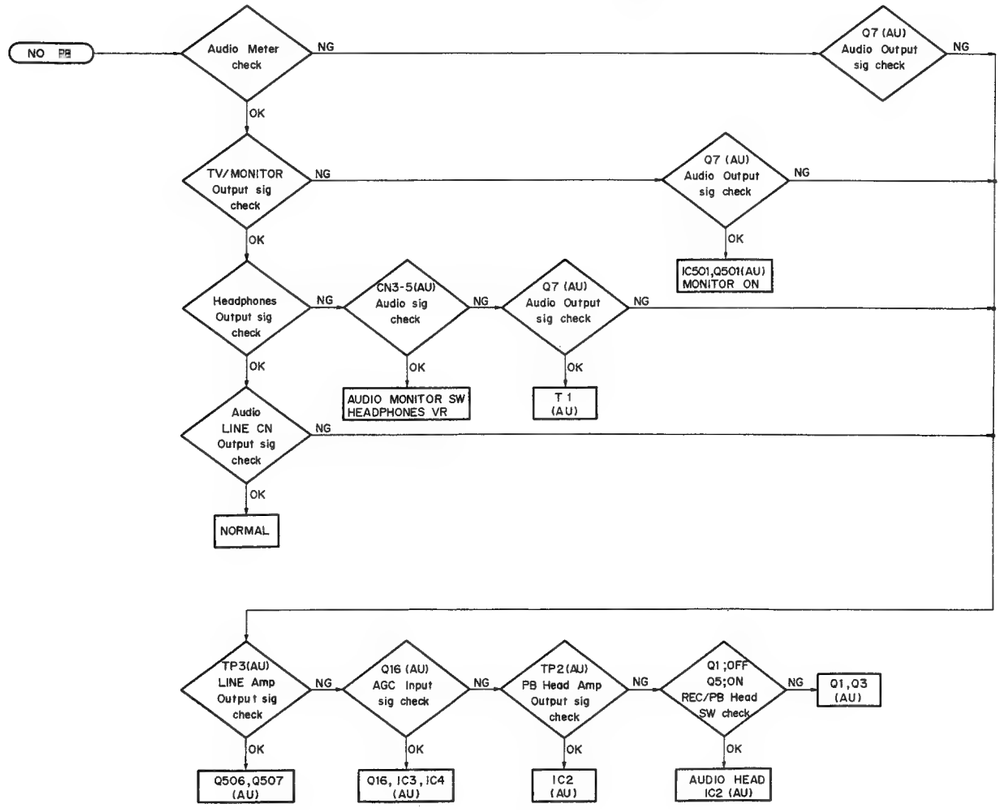


AUDIO FLOW CHART

AUDIO SYSTEM FLOW CHART

CONDITION; Clean the Audio Head



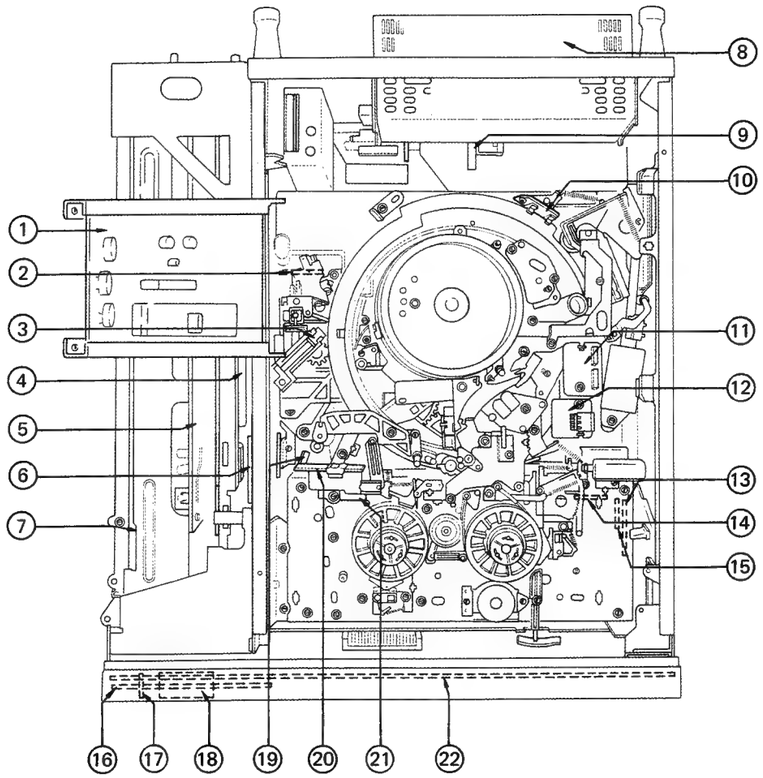


SP0174 / Druck 28

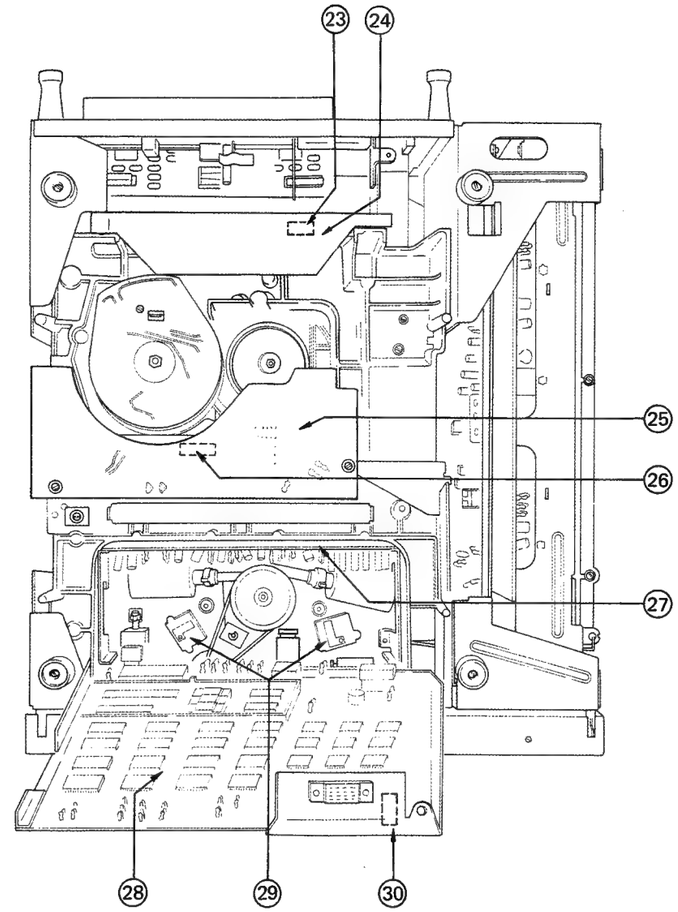
SECTION 13
PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

LOCATION OF MAIN PARTS

< TOP VIEW >



<BOTTOM VIEW>



⑨ AC-27/AC-36 or AC-35 BOARD
⑪ AH-3 BOARD
⑦ AU-21A BOARD
⑬ CC-9 BOARD (Assembled into cassette-up compartment)
⑭ CC-10 BOARD (Assembled into cassette-up compartment)
⑮ CC-11 BOARD (Assembled into cassette-up compartment)
㉔ DC-10E BOARD
⑫ EC-19 BOARD
⑩ FR-11 BOARD
⑰ HP-3 BOARD

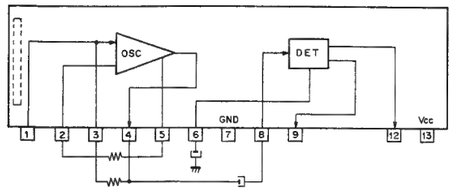
㉒ KY-13B BOARD
② LM-9 BOARD
⑯ MC-14 BOARD
⑱ MI-3 BOARD
⑥ ML-1 BOARD
㉕ MR-6/MR-11 BOARD
㉗ PD-16 BOARD
㉑ PH-4 BOARD
③ PH-5 BOARD
㉓ PT-9 BOARD

㉖ PT-9 BOARD
㉚ PT-9 BOARD
① RP-8A BOARD
⑤ SV-47A BOARD
㉙ SW-43 BOARD
⑳ SW-46 BOARD
⑲ SW-50 BOARD
㉘ SY-68C BOARD
⑧ UR-02 (Switching regulator)
④ YC-3 BOARD

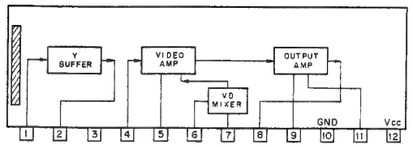
SEMICONDUCTOR ELECTRODES

TYPE	INTERCHANGEABILITY			PAGE
BX343 BX388 BX389 BX3914 BX3915A				13-4
CD4001AE/BE	TC4001BP	MB84001B	uPD4001BC	
CD4011AE/BE	TC4011BP	MB84011B	uPD4011BC	
CD4013AE/BE		MB84013B	uPD4013BC	
CD4016AE/BE	TC4016BP	MB84016B		
CD4021AE/BE	TC4021BP			13-5
CD4022AE/BE	TC4022BP			
CD4024AE/BE	TC4024BP			
CD4025AE/BE	TC4025BP			
CD4030AE/BE	TC4030BP			
CD4042AE/BE	TC4042BP			13-6
CD4052BE	TC4052BP			
CD4053BE	TC4053BP	MC14053BCP		
CD4066AE/BE	TC4066BP			
CD4069UBE	TC4069UBP	MB84069UB	MSM4069RS	
CD4071BE	TC4071BP			
CD4073BE	TC4073BP			13-7
CD4081BE	TC4081BP			
CD4082BE	TC4082BP			
CD4093BE	TC4093BP			
CX130 CX134A CX150 CX187 CX188				
CX859 LH0080				13-8
LH0082 LM324 LM358JG M54516P M54517P	uPC324C uPC358C			13-9
MB8114NL MB8747 MC14175BCP MBM2764-25Z SN74LS11N MSM5128-15RS M-54543L	uPD444C TC40175BP			13-10
MC14503BCP	HD14503BP			13-11
MC14520BCP	TC4520BP			
MC14538BCP	HD14538BP			
MC14543BCP	TC4543BP			
NJM2903D NJM4560D	NJM4560D-D			
RC4558	uPC4558C	NJM4558D		
SN7404N	SN74LS04N	M74LS04P		13-12
SN74390N	SN74LS390N	M74LS390P		
SN74LS245N SN74S138N	SN74LS138N	M74LS138P		
SN74S139N	SN74LS139N	M74LS139P		
TA7060P	TA7060AP			
TC4013BF	TC4013BP			
TC40H002P TC40H368P uPC1158H2 uPC311C				13-13

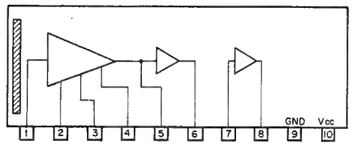
BX343 (SONY)
OSCILLATOR/DETECTOR
—REAR VIEW—



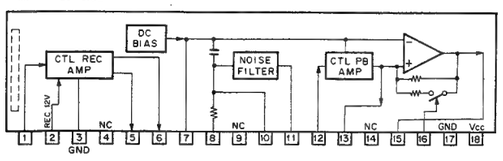
BX388 (SONY)
VIDEO AMP/ VD MIXER
—IMPRINTED SIDE—



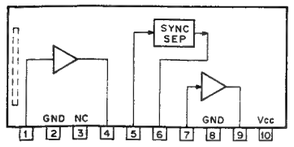
BX389 (SONY)
VIDEO AMPLIFIER
—IMPRINTED SIDE—



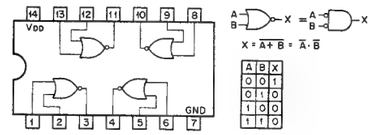
BX3914 (SONY)
CTL REC/PB AMPLIFIER
—IMPRINTED SIDE—



BX3915A (SONY)
SYNC SEPARATOR
—IMPRINTED SIDE—

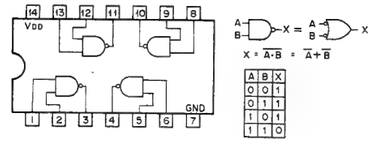


CD4001AE/BE (RCA)
TC4001BP (TOSHIBA)
μPD4001BC (NEC)
MB84001B (FUJITSU)
C-MOS 2-INPUT NOR GATE
—TOP VIEW—



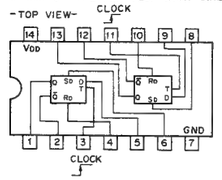
A	B	X
0	0	1
0	1	0
1	0	0
1	1	0

CD4011AE/BE (RCA)
TC4011BP (TOSHIBA)
μPD4011BC (NEC)
MB84011B (FUJITSU)
C-MOS 2-INPUT NAND GATE
—TOP VIEW—



A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

CD4013AE/BE (RCA)
MB84013B (FUJITSU)
μPD4013BC (NEC)
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
—TOP VIEW—



DIRECT R-S FLIP FLOP

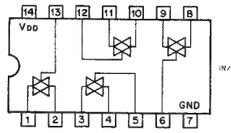
So	Ro	Q
0	0	On
0	1	0
1	0	1
1	1	0

D-TYPE FLIP FLOP

tn	tn+1
D	Q
0	0
1	1

CLOCK T: tn: BEFORE CLOCK tn+1: AFTER CLOCK

CD4016AE/BE (RCA)
MB84016B (FUJITSU)
TC4016BP (TOSHIBA)
C-MOS BILATERAL SWITCH
—TOP VIEW—

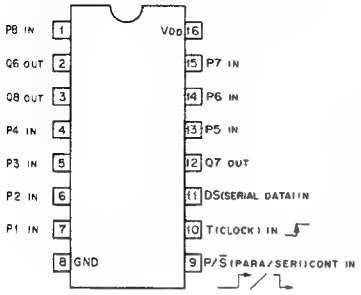


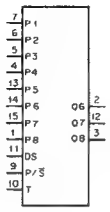
CONTROL	SWITCH
0	OFF
1	ON

CD4021AE/BE (RCA)
TC4021BP (TOSHIBA)

C-MOS ASYNCHRONOUS PARALLEL/SYNCHRONOUS SERIAL INPUT 8-BIT STAIC SHIFT REGISTER

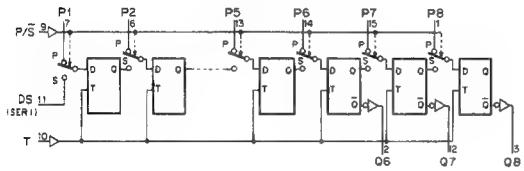
— TOP VIEW —





tn				tn + 1							
INPUT				INTERNAL OUTPUTS					OUTPUTS		
P/S̄ CONT	T	P	DS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	X	P1 ~ P8	X	P1	P2	P3	P4	P5	P6	P7	P8
0	↓	X	1	1	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n
0	↓	X	0	0	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n
X	0	X	X	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n	Q8n

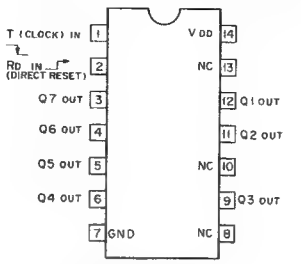
tn; BEFORE CLOCK
tn+1; AFTER CLOCK

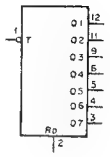


CD4024AE/BE (RCA)
TC4024BP (TOSHIBA)

C-MOS ASYNCHRONOUS 7-BIT BINARY COUNTER

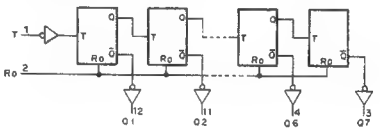
— TOP VIEW —





COUNT	INPUTS		OUTPUTS							
	T	RD	Q7	Q6	Q5	Q4	Q3	Q2	Q1
0	X	1	0	0	0	0	0	0	0
1	↓	0	0	0	0	0	0	0	1
2	↓	0	0	0	0	0	0	1	0
3	↓	0	0	0	0	0	0	1	1
4	↓	0	0	0	0	0	1	0	0
125	↓	0	1	1	1	1	1	0	1
126	↓	0	1	1	1	1	1	1	0
127	↓	0	1	1	1	1	1	1	1
—	0	0	NO CHANGE						
—	1	0							

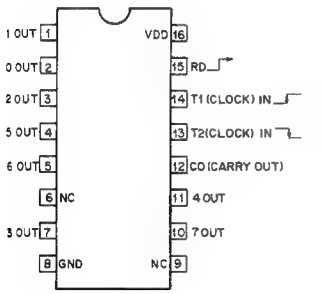
0 ; LOW
1 ; HIGH
X ; DONT'CARE

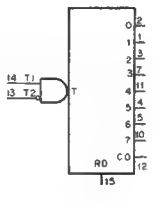


CD4022AE/BE (RCA)
TC4022BP (TOSHIBA)

C-MOS OCTAL COUNTER/DIVIDER

—TOP VIEW—





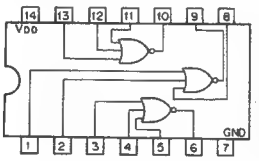
COUNT	INPUTS		OUTPUTS								
	RD	T=T1·T2	7	6	5	4	3	2	1	0	CO
0	1	X	0	0	0	0	0	0	0	1	1
0	0	↓	0	0	0	0	0	0	0	1	1
1	0	↓	0	0	0	0	0	0	1	0	1
2	0	↓	0	0	0	0	0	1	0	0	1
3	0	↓	0	0	0	0	1	0	0	0	1
4	0	↓	0	0	0	1	0	0	0	0	0
5	0	↓	0	0	1	0	0	0	0	0	0
6	0	↓	0	1	0	0	0	0	0	0	0
7	0	↓	1	0	0	0	0	0	0	0	0
NO COUNT	0	1	NO CHANGE								
	0	0									

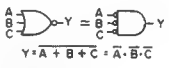
1: HIGH
0: LOW
X: DONT CARE

CD4025AE/BE (RCA)
TC4025BP (TOSHIBA)

C-MOS 3-INPUT NOR GATE

— TOP VIEW —



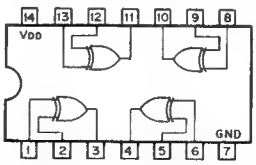


A	B	C	Y
0	0	0	1
X	X	1	0
X	1	X	0
1	X	X	0

CD4030AE/BE (RCA)
TC4030BP (TOSHIBA)

C-MOS EXCLUSIVE OR GATE

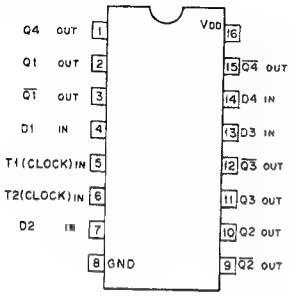
— TOP VIEW —

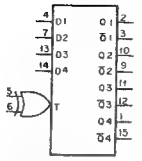


A	B	X
0	0	0
0	1	1
1	0	1
1	1	0

SEMICONDUCTOR ELECTRODES

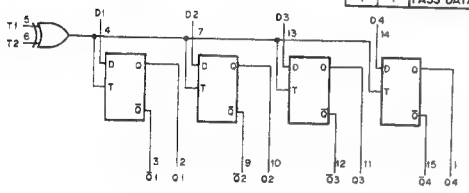
CD4042AE/BE (RCA)
TC4042BP (TOSHIBA)
C-MOS D-TYPE LATCH
—TOP VIEW—



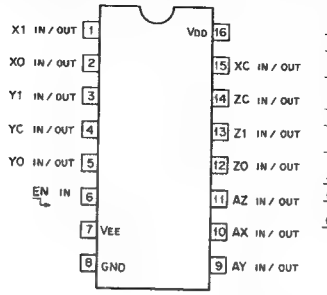


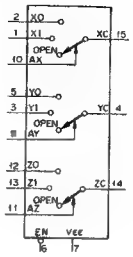
FUNCTION TABLE

T1	T2	Q / Q̄
0	0	PASS DATA
0	1	LATCH DATA
1	0	LATCH DATA
1	1	PASS DATA



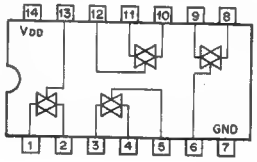
CD4053BE (RCA)
TC4053BP (TOSHIBA)
MC14053BCP (MOTOROLA)
C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER
—TOP VIEW—





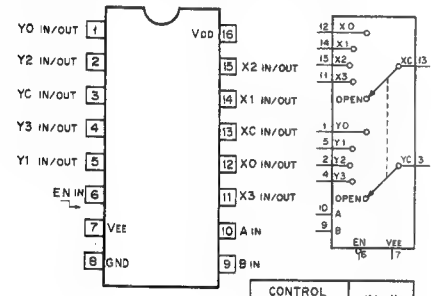
CONT. INPUTS		ON
EN	A (X,Y,Z)	CHANNEL
0	0	0
0	1	1
1	X	OPEN

CD4066AE/BE (RCA)
TC4066BP (TOSHIBA)
C-MOS BILATERAL ANALOG SWITCH
—TOP VIEW—



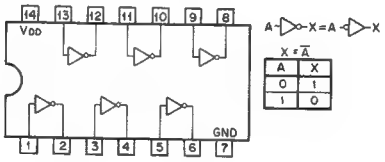
CONTROL	SWITCH
0	OFF
1	ON

CD4052BE (RCA)
TC4052BP (TOSHIBA)
C-MOS 4-CHANNEL MULTIPLEXER / DEMULTIPLEXER
—TOP VIEW—



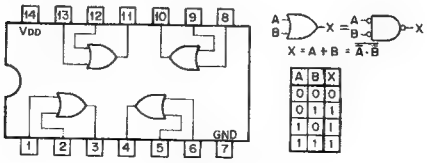
CONTROL INPUTS			"ON" CHANNEL
EN	B	A	
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	OPEN

CD4069UBE (RCA)
MSM4069 (OKI)
MSM4069RS (OKI)
TC4069UBP (TOSHIBA)
MB84069UB (FUJITSU)
C-MOS INVERTER
—TOP VIEW—



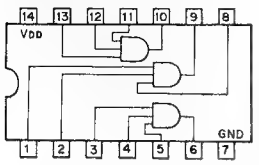
A	X
0	1
1	0

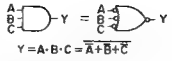
CD4071BE (RCA)
TC4071BP (TOSHIBA)
C-MOS 2-INPUT OR GATE
—TOP VIEW—



A	B	X
0	0	0
0	1	1
1	0	1
1	1	1

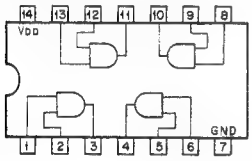
CD4073BE (RCA)
TC4073BP (TOSHIBA)
C-MOS 3-INPUT POSITIVE AND GATE
– TOP VIEW –

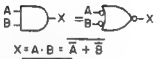




A	B	C	Y
X	X	0	0
X	0	X	0
0	X	X	0
1	1	1	1

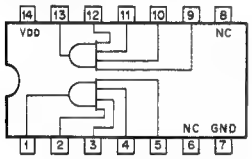
CD4081BE (RCA)
TC4081BP (TOSHIBA)
C-MOS 2-INPUT AND GATE
– TOP VIEW –

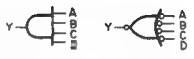




A	B	X
0	0	0
0	1	0
1	0	0
1	1	1

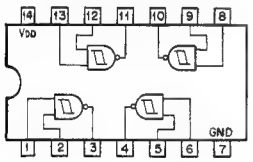
CD4082BE (RCA)
TC4082BP (TOSHIBA)
C-MOS 4-INPUT AND GATE
– TOP VIEW –

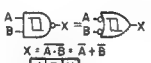




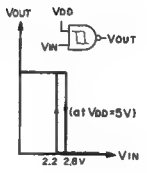
D	C	B	A	Y
X	X	X	0	0
X	X	0	X	0
X	0	X	X	0
0	X	X	X	0
1	1	1	1	1

CD4093BE (RCA)
TC4093BP (TOSHIBA)
C-MOS 2-INPUT NAND SCHMITT TRIGGER
– TOP VIEW –

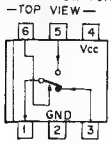




A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

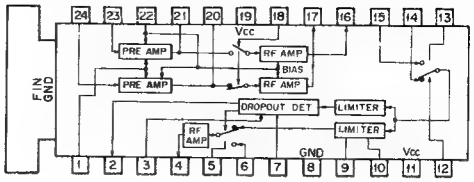


CX130 (SONY)
ANALOG SWITCH
– TOP VIEW –

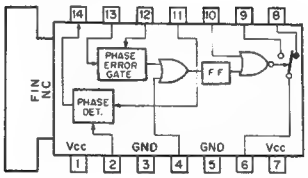


CONT. INPUT (PIN6)	SW
LOW OR OPEN	
HIGH	

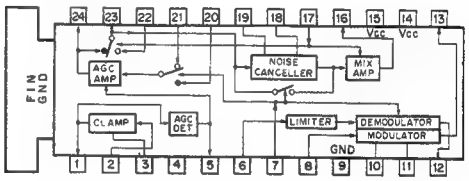
CX134A (SONY)
– TOP VIEW –



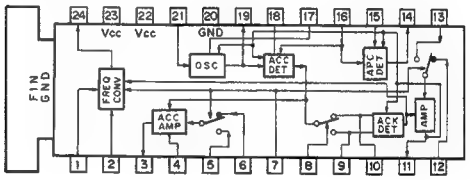
CX150 (SONY)
– TOP VIEW –



CX187 (SONY)
– TOP VIEW –

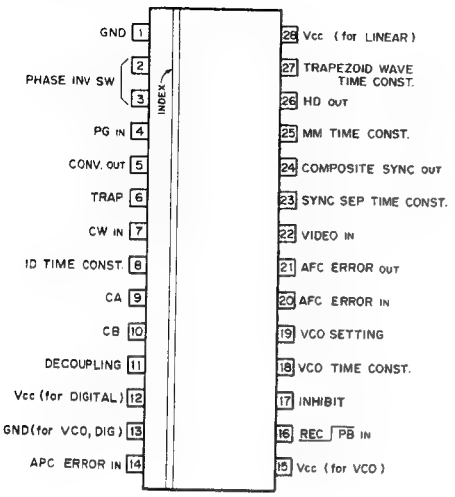


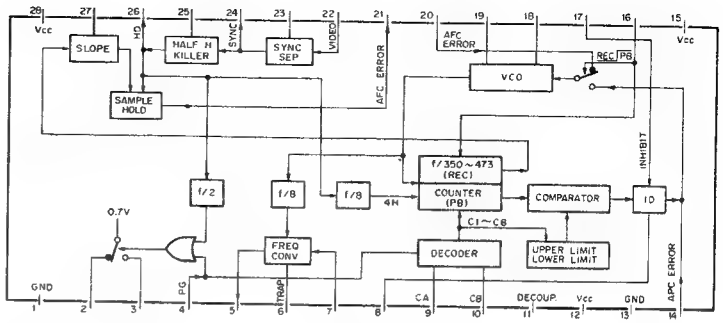
CX188 (SONY)
– TOP VIEW –



SEMICONDUCTOR ELECTRODES

CX 859 (SONY)
—TOP VIEW—





DECODER TRUTH TABLE

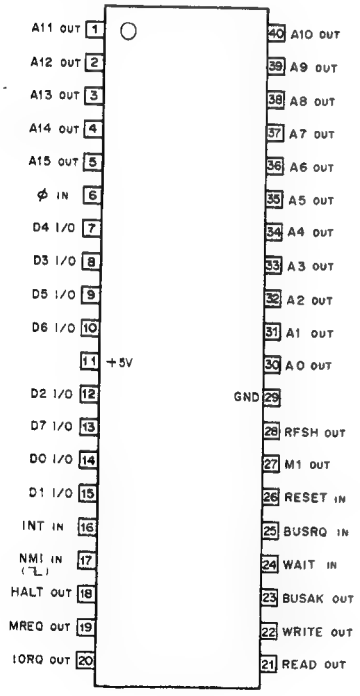
CA \ CB	LOW	OPEN	HIGH
LOW	C1	C7	—
OPEN	C4	C5	C6
HIGH	—	※C2 C3	C8

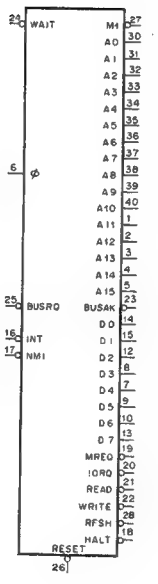
※ PG : L··· C2
PG : H··· C3

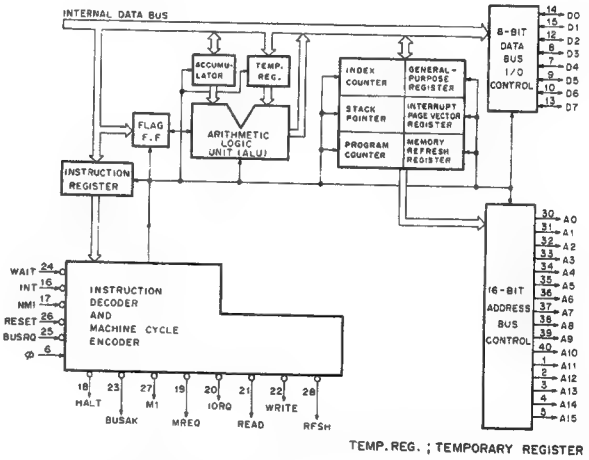
AFC/APC PRESET DATA

	AFC COUNT DOWN	APC ID COUNT	
		UPPER LIM.	LOWER LIM.
C1	f/473	105	95
C2	f/351	129	119
C3	f/353	137	127
C4	f/351	118	104
C5	f/351	131	117
C6	f/351	144	130
C7	f/350	136	104
C8	——	125	115

LH0080 (SHARP)
N-MOS 8-BIT MICROPROCESSOR
—TOP VIEW—



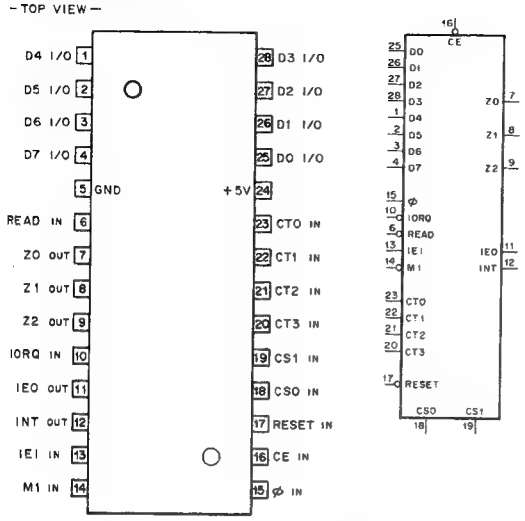




TEMP. REG. ; TEMPORARY REGISTER

φ	; CLOCK
A0-A15	; 3-STATE ADDRESS OUTPUT
BUSAK	; BUS ACKNOWLEDGE
BUSRQ	; BUS REQUEST
D0-D7	; 3-STATE DATA INPUT/OUTPUT
HALT	; HALT STATE
INT	; INTERRUPT REQUEST
IORQ	; 3-STATE I/O REQUEST
M1	; MACHINE CYCLE 1
MREQ	; 3-STATE MEMORY REQUEST
NMI	; NON-MASKABLE INTERRUPT (DOWN EDGE TRIGGER)
READ	; 3-STATE MEMORY READ
RFSH	; REFRESH
WRITE	; 3-STATE MEMORY WRITE

LH0082 (SHARP)
N-MOS COUNTER TIMER CIRCUIT
– TOP VIEW –

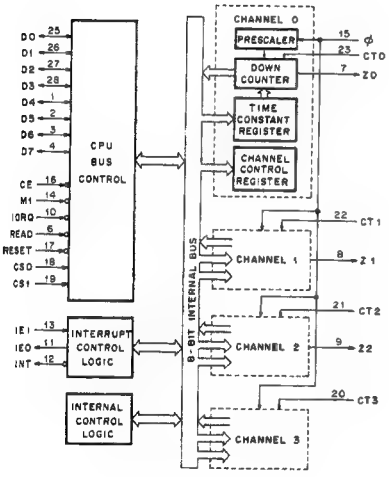


φ ; SYSTEM CLOCK
CE ; CHIP ENABLE
CSO, CS1 ; CHANNEL SELECT
CTO-CT3 ; EXTERNAL CLOCK/TIMER TRIGGER
DO-D7 ; 3-STATE DATA INPUT/OUTPUT
IEI ; INTERRUPT ENABLE INPUT
IEO ; INTERRUPT ENABLE OUTPUT
INT ; INTERRUPT REQUEST (OPEN DRAIN)
IORQ ; I/O REQUEST
M1 ; MACHINE CYCLE 1
READ ; READ CYCLE STATUS
ZO-Z2 ; ZERO COUNT/TIME OUT

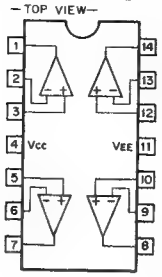
CHANNEL SELECT FUNCTION

CS1	CSO	SELECTED CHANNEL
0	0	0
0	1	1
1	0	2
1	1	3

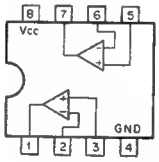
0; LOW LEVEL
1; HIGH LEVEL



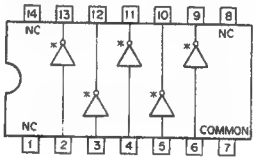
LM324 (NSC)
μPC324C (NEC)
QUAD. OP AMPLIFIER
– TOP VIEW –

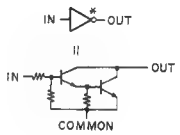


LM358JG (TI)
μPC358C (NEC)
DUAL OPERATIONAL AMPLIFIERS
—TOP VIEW—

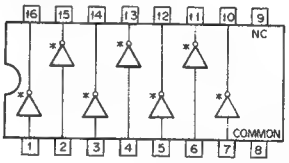


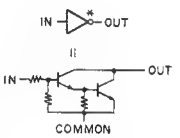
M54516P (MITSUBISHI)
TRANSISTOR ARRAY
– TOP VIEW –





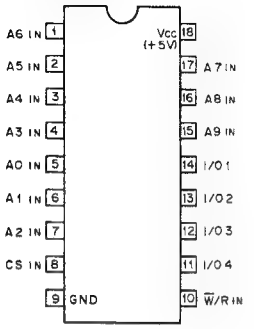
M54517P (MITSUBISHI)
TRANSISTOR ARRAY
– TOP VIEW –

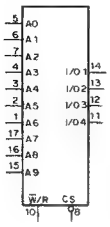




SEMICONDUCTOR ELECTRODES

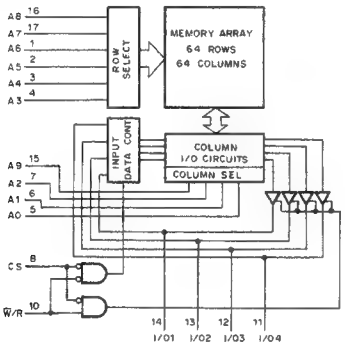
MB8114NL (FUJITSU)
μPD444C (NEC)
N-MOS 4096(1024×4)-BIT STATIC RAM (ACCESS TIME:450nS)
—TOP VIEW—



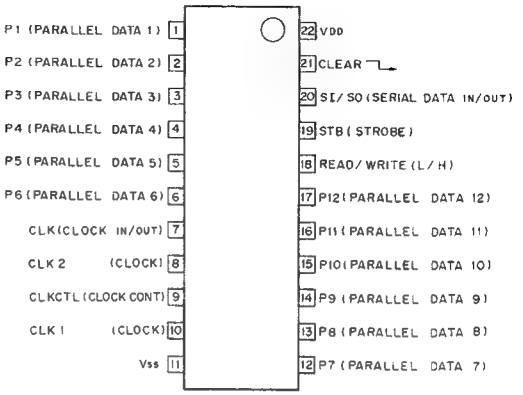


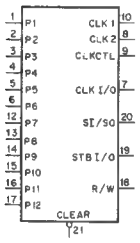
INPUTS		FUNCTION
CS	W/R	
0	0	WRITE
0	1	READ
1	X	DISABLE (OUTPUT;HI-Z)

A0-A9; ADDRESS INPUTS
W/R; WRITE/READ ENABLE
CS; CHIP SELECT
I/O1-I/O4; DATA INPUTS/OUTPUTS



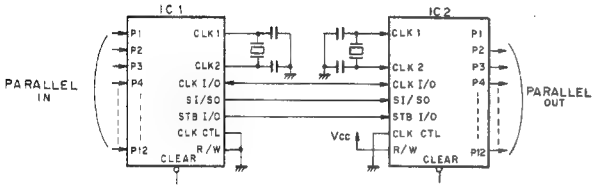
MB 8747 (FUJITSU)
C-MOS SERIAL — PARALLEL CONVERTER WITH OSCILLATER
—TOP VIEW—

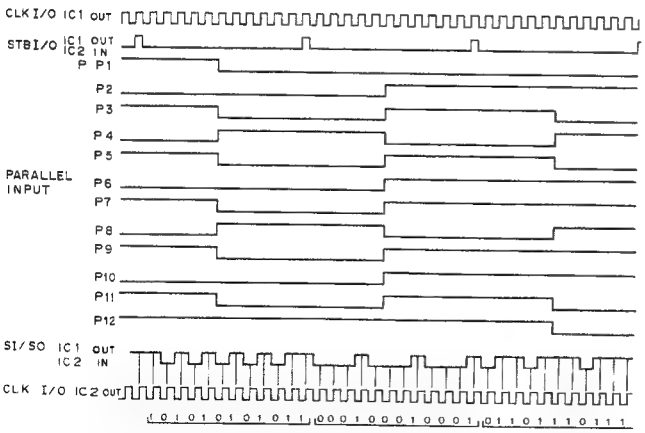




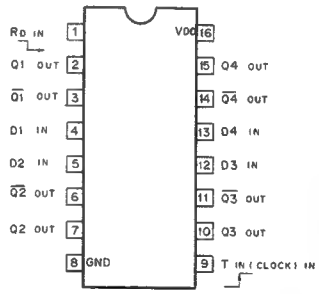
CLK CTL	CLK I/O
0	OUT
1	IN

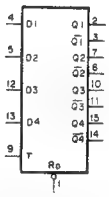
R/W	SI/SO	P1~P12	STB I/O
0	OUT	IN	OUT
1	IN	OUT	IN



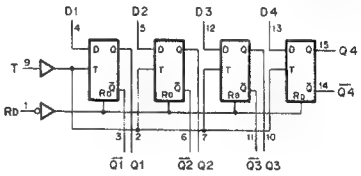


MC14175BCP (MOTOROLA)
TC40175BP (TOSHIBA)
C-MOS D-TYPE FLIP-FLOP
-TOP VIEW-





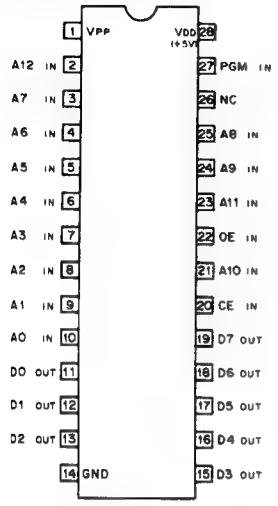
T	D	RD	Q	$\bar{Q}$	
↑	0	1	0	1	
↑	1	1	1	0	
L	X	1	Q	$\bar{Q}$	NO CHANGE
X	X	0	0	1	

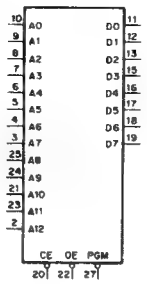


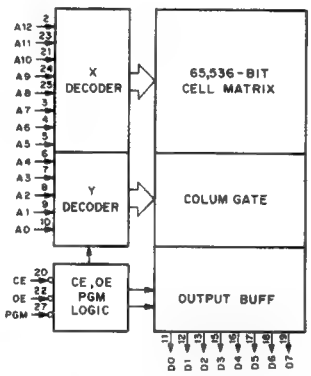
MBM2764-25Z (FUJITSU) (ACCESS TIME = 250 nS)

N-MOS 64K(8K-8) ERASABLE PROM WITH 3-STATE OUTPUTS

— TOP VIEW —







A0-A12 : ADDRESS
CE : CHIP ENABLE
OE : OUTPUT ENABLE
PGM : PROGRAM ENABLE
DO-D7 : DATA OUTPUT
VPP : PROGRAM VOLTAGE

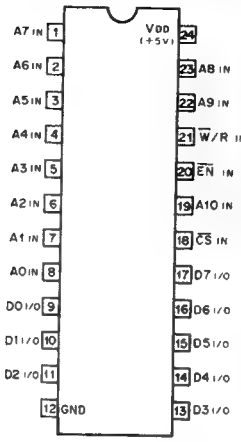
An	CE	OE	PGM	VPP	Dn	FUNCTION
An	0	0	1	+5V	DENTERED	READ
An	0	1	1	+5V	HI-Z	OUTPUT DISABLE
An	0	0	0	+5V	HI-Z	OUTPUT DISABLE
X	1	X	X	+5V	HI-Z	STANDBY
An	0	X	⊓	+21V	DIN	PGM
An	0	0	1	+21V	DENTERED	PGM VERIFY
X	1	X	X	+21V	HI-Z	PGM INH

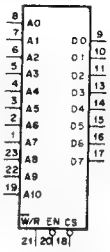
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

MSM5128-15RS (OKI) (ACCESS TIME = 150 nS)

C-MOS 16384(2048x8)-BIT HIGH SPEED STATIC RAM

— TOP VIEW —

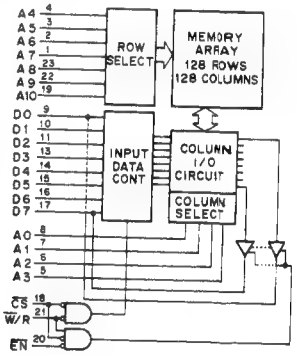




INPUTS			FUNCTION
CS	W/R	EN	
0	0	X	WRITE
0	1	0	READ
0	1	1	DISABLE (OUTPUT=HI-Z)
1	X	X	DISABLE (OUTPUT=HI-Z)

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

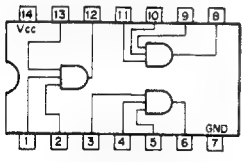
A0 - A10 ; ADDRESS INPUTS
W/R ; WRITE / READ ENABLE
EN ; OUTPUT ENABLE
CS ; CHIP SELECT
DO - D7 ; DATA INPUTS / OUTPUTS

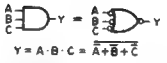


SN74LS11N (TI)

TTL 3-INPUT POSITIVE-AND GATE

— TOP VIEW —





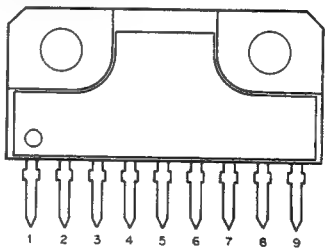
A	B	C	Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

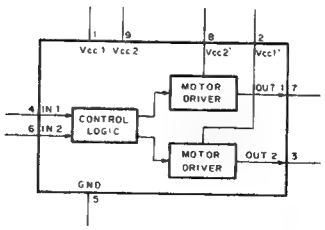
0 ; LOW LEVEL
1 ; HIGH LEVEL

M54543L (MITSUBISHI)

BI-DIRECTIONAL MOTOR DRIVER

— SIDE VIEW —



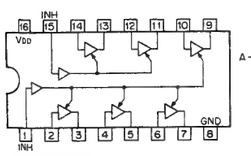


IN		OUT		MODE
1	2	1	2	
0	0	Z	Z	NO OPERATION
1	0	1	0	ROTATION
0	1	0	1	REVERSE ROTATION
1	1	0	0	BRAKE

0 : LOW LEVEL
1 : HIGH LEVEL
Z : HIGH IMPEDANCE

SEMICONDUCTOR ELECTRODES

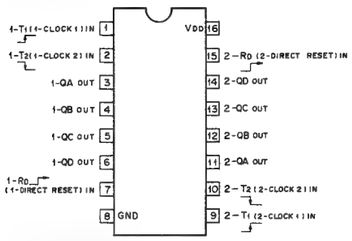
MC14503BCP (MOTOROLA)
HD14503BP (HITACHI)
C-MOS NON-INVERTING 3-STATE BUFFER
—TOP VIEW—



A	INH	Y
0	0	0
1	0	1
X	1	OPEN

X=DON'T CARE
0=LOW LEVEL
1=HIGH LEVEL

MC14520BCP (MOTOROLA)
HD14520BP (HITACHI)
C-MOS DUAL 4-BIT BINARY UP COUNTER
— TOP VIEW —

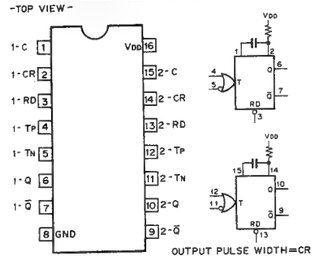


STATE	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

0:LOW
1:HIGH

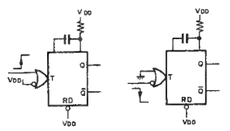
T1	T2	Rd	ACTION
↓	1	0	INCREMENT COUNTER
0	↓	0	INCREMENT COUNTER
↓	X	0	NO CHANGE
X	↓	0	NO CHANGE
↓	0	0	NO CHANGE
1	↓	0	NO CHANGE
X	X	1	QA THRU QD = 0

MC14538BCP (MOTOROLA)
HD14538BP (HITACHI)
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
-TOP VIEW-

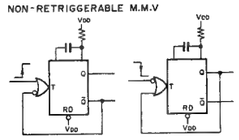


OUTPUT PULSE WIDTH=CR

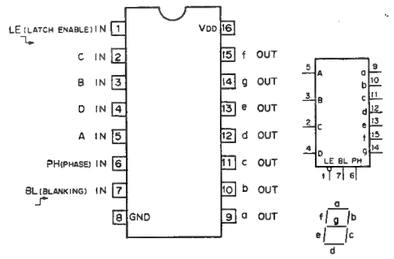
RETRIGGERABLE M.M.V



NON-RETRIGGERABLE M.M.V



MC14543BCP (MOTOROLA)
TC4543BP (TOSHIBA)
C-MOS BCD-TO-SEVEN-SEGMENT LATCH / DECODER / DRIVER
—TOP VIEW—



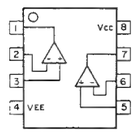
INPUTS							OUTPUTS							DISPLAY
BL	PH**	D	C	B	A		a	b	c	d	e	f	g	
1	0	X	X	X	X		0	0	0	0	0	0	0	BLANK
0	0	0	0	0	0		1	1	1	1	1	1	0	0
0	0	0	0	0	1		0	1	1	0	0	0	0	1
0	0	0	0	1	0		1	1	0	1	1	0	1	2
0	0	0	0	1	1		1	1	1	1	0	0	1	3
0	0	0	1	0	0		0	1	1	0	0	1	1	4
0	0	0	1	0	1		1	0	1	1	0	1	1	5
0	0	0	1	1	0		1	0	1	1	1	1	1	6
0	0	0	1	1	1		1	1	1	0	0	0	0	7
0	0	1	0	0	0		1	1	1	1	1	1	1	8
0	0	1	0	0	1		1	1	1	1	0	1	1	9
**	1	* *					INVERSE OF OUTPUT CONBINATIONS ABOVE							DISPLAY AS ABOVE

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

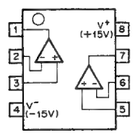
* = FOR LIQUID CRYSTAL READOUTS, APPLY A SQUARE WAVE TO PH.
FOR COMMON CATHODE LED READOUTS, SELECT PH = @ (LOW).
FOR COMMON ANODE LED READOUTS, SELECT PH = 1 (HIGH).

** ABOVE COMBINATIONS.

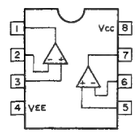
NJM2903D (JRC)
OPERATIONAL AMPLIFIER
-TOP VIEW-



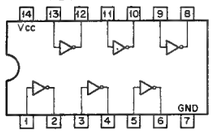
NJM4560D (JRC)
NJM4560DD (JRC)
OPERATIONAL AMPLIFIER
- TOP VIEW -



RC4558 (RAYTHEON)
NJM4558D (JRC)
μPC4558C (NEC)
OPERATIONAL AMPLIFIER
-TOP VIEW-

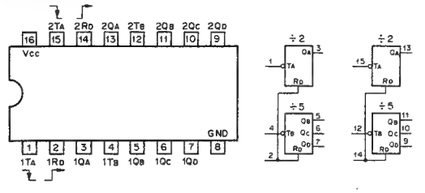


SN7404N (TI)
M74LS04P (MITSUBISHI)
SN74LS04N (TI)
TTL INVERTER
—TOP VIEW—



A	X
L	H
H	L

SN74390N (TI) M74LS390P (MITSUBISHI)
SN74LS390N (TI)
TTL DIVIDE-BY-2 AND DIVIDE-BY-5 COUNTER
—TOP VIEW—



COUNT SEQUENCE
÷2 SECTION

COUNT	QA
0	0
1	1

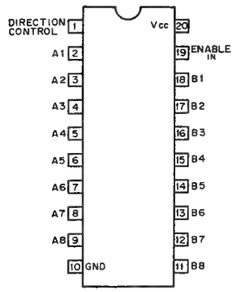
÷5 SECTION

COUNT	QD	QC	QB
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0

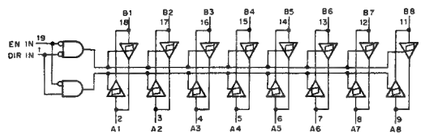
RESET/COUNT FUNCTION

RO	QD	QC	QB	QA
1	0	0	0	0
0	COUNT			

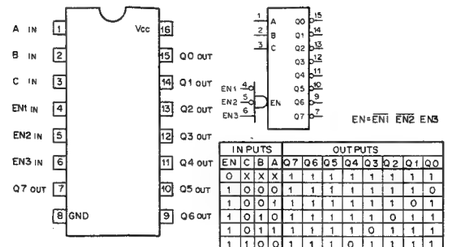
SN74LS245N (TI)
TTL OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUT
—TOP VIEW—



ENABLE	DIRECTION CONTROL	DATA
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

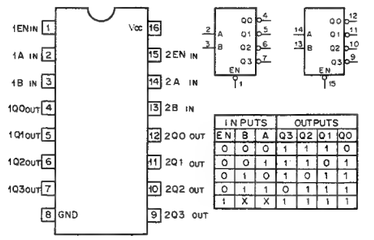


SN74S138N (TI)
SN74LS138N (TI)
M74LS138P (MITSUBISHI)
TTL 3-TO-8-LINE DECODER/DEMULTIPLEXER
—TOP VIEW—



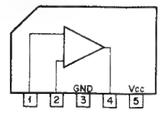
INPUTS				OUTPUTS							
EN	C	B	A	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

SN74S139N (TI) M74LS139N (MITSUBISHI)
SN74LS139N (TI)
TTL 2-TO-4-LINE DECODER/DEMULTIPLXER
—TOP VIEW—

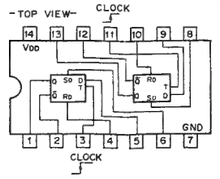


INPUTS			OUTPUTS			
EN	B	A	Q3	Q2	Q1	Q0
0	0	0	1	1	1	0
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1
1	X	X	1	1	1	1

TA7060P (TOSHIBA)
TA7060AP (TOSHIBA)
LINEAR AMP
— SIDE VIEW —



TC4013BF (TOSHIBA)
TC4013BP (TOSHIBA)
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET / RESET
-TOP VIEW-



DIRECT R-S FLIP FLOP

S	R	Q	Q̄
0	0	On	On
0	1	0	1
1	0	1	0
1	1	0	1

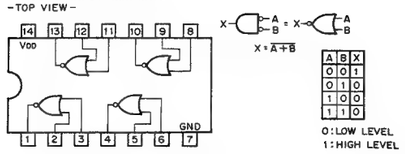
D-TYPE FLIP FLOP

tn	tn+1
D	Q
0	0
1	1

CLOCK T: tn; BEFORE CLOCK, tn+1; AFTER CLOCK

0: LOW LEVEL
1: HIGH LEVEL

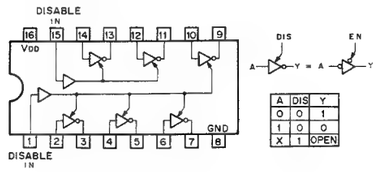
TC40H002P (TOSHIBA)
C-MOS 2-INPUT NOR GATE
-TOP VIEW-



A	B	X
0	0	1
0	1	0
1	0	0
1	1	0

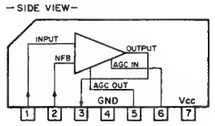
0:LOW LEVEL
1:HIGH LEVEL

TC40H368P(TOSHIBA)
C-MOS INVERTING 3-STATE BUFFER
—TOP VIEW—

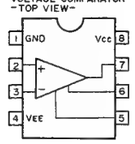


A	DIS	Y
0	0	1
1	0	0
X	1	OPEN

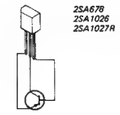
μPC1158H2 (NEC)
LOW NOISE PREAMPLIFIER WITH AGC
-SIDE VIEW-

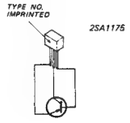


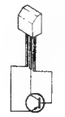
μPC311C (NEC)
VOLTAGE COMPARATOR
-TOP VIEW-

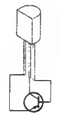


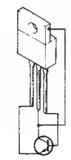
(PNP TYPE)

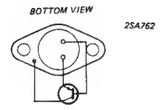




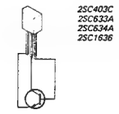


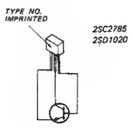


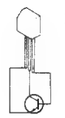


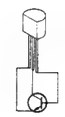


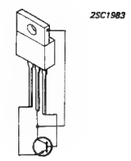
(NPN TYPE)

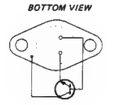


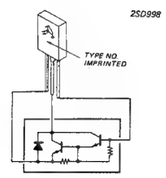


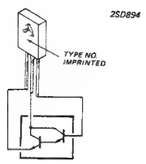


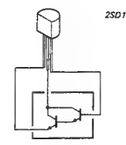


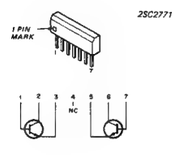




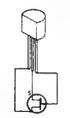


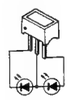


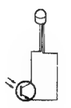


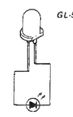


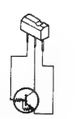
(OTHER)

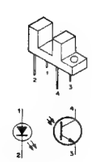


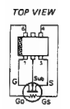




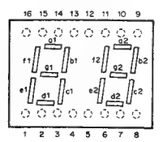


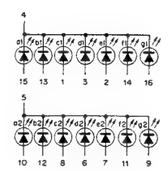




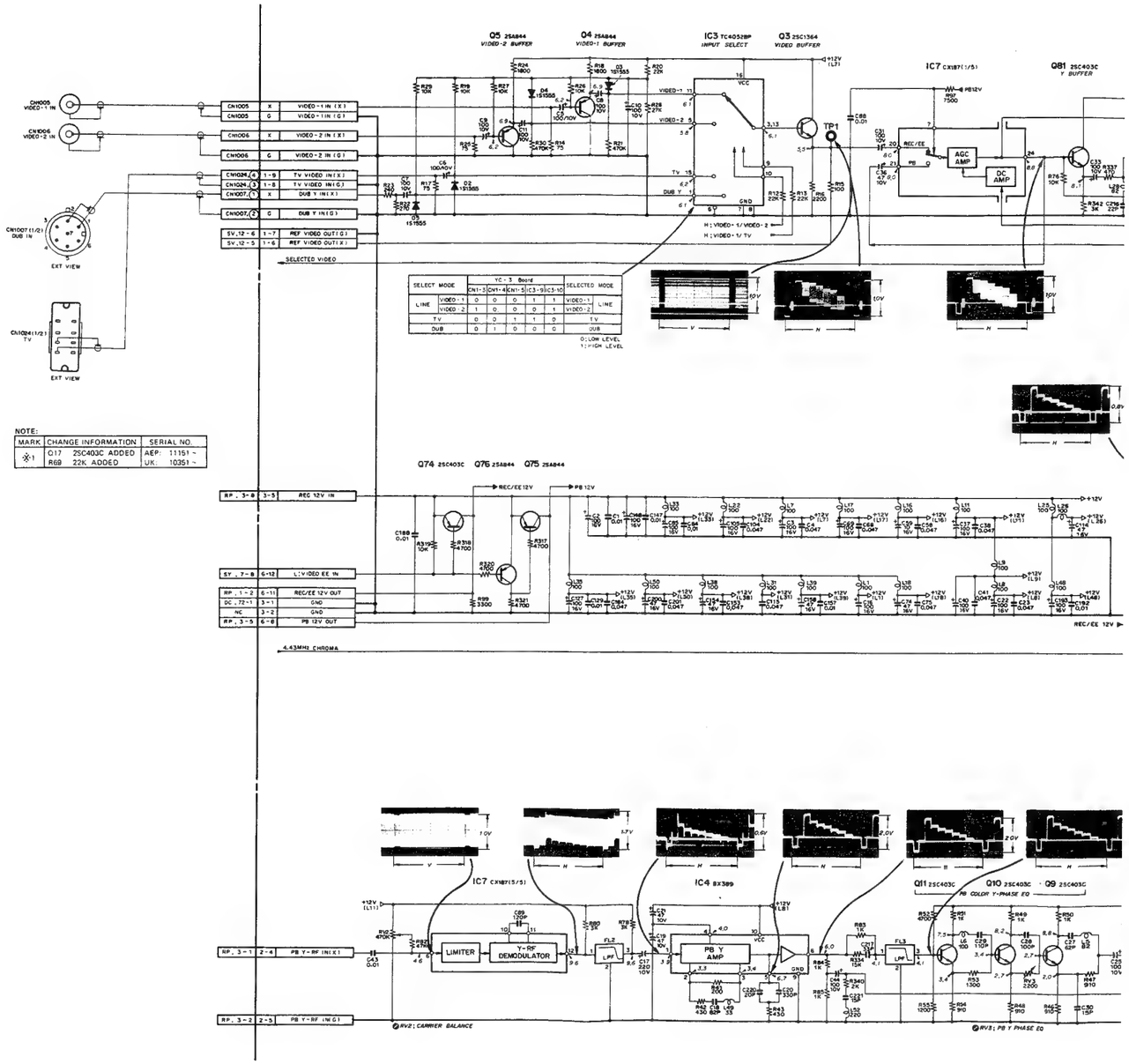


SL1222 (SANYO)
DUAL 7-SEGMENT LED
—TOP VIEW—



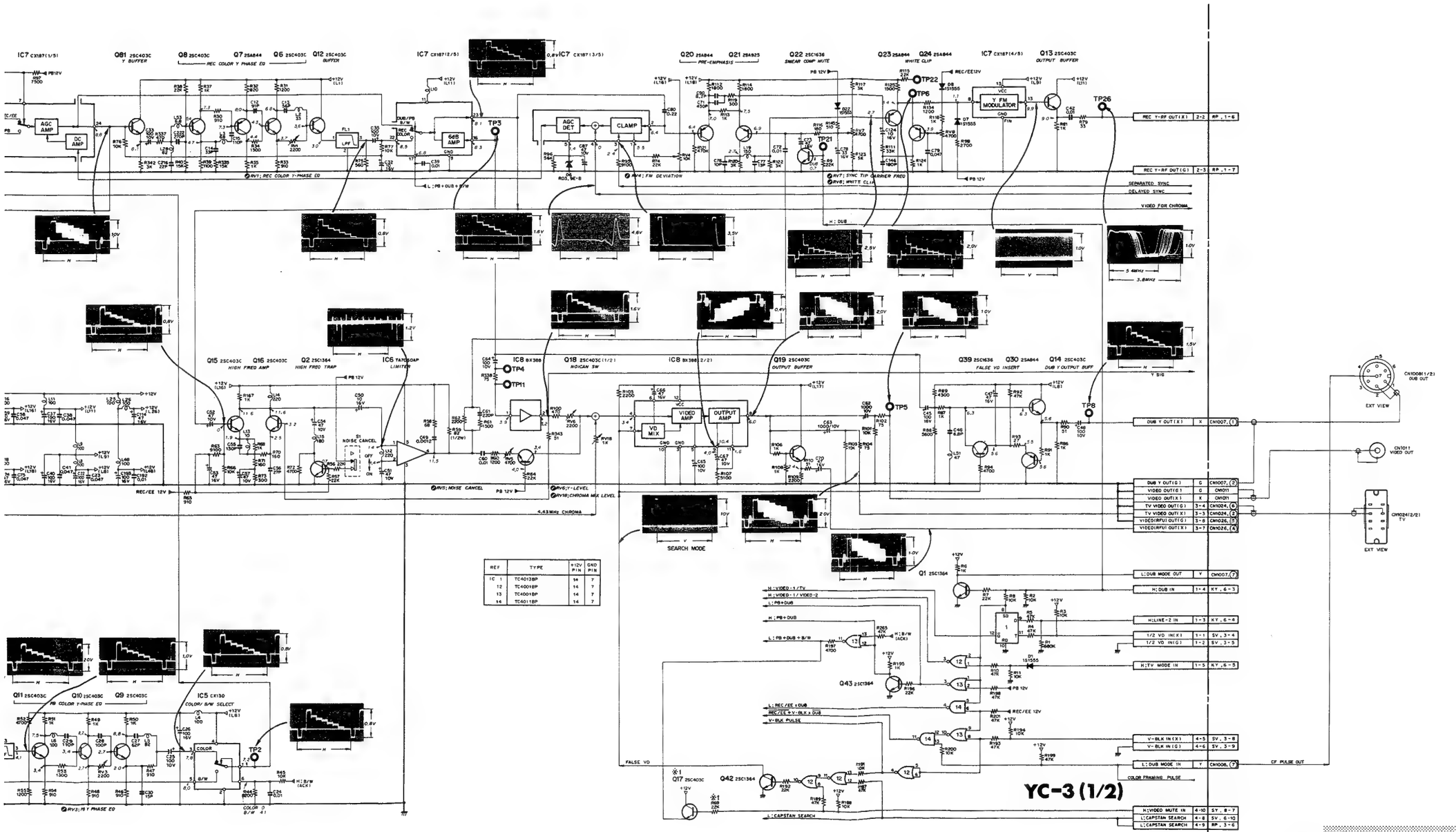


YC-3 (1/2)
(Y MOD/DEMODULATOR)



NOTE:

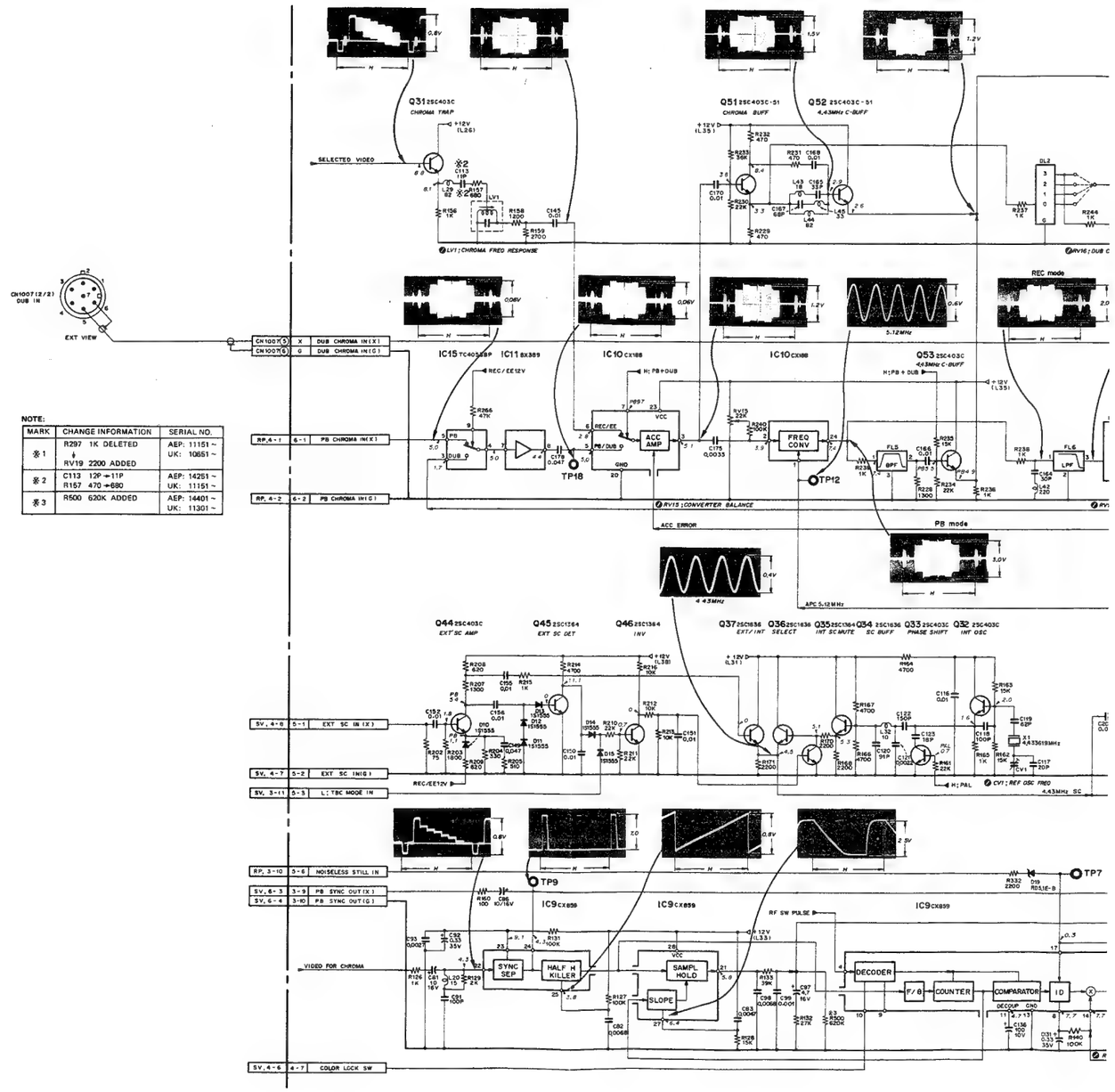
MARK	CHANGE INFORMATION	SERIAL NO.
※1	Q17 2SC403C ADDED R69 22K ADDED	AEP: 11151 ~ UK: 10351 ~



REF	TYPE	+12V PIN	GND PIN
IC 1	TC4013BP	14	7
12	TC4001BP	14	7
13	TC4001BP	14	7
14	TC4011BP	14	7

NOTE: **The shaded and ⚠ -marked components are critical to safety.**
Replace only with same components as specified.

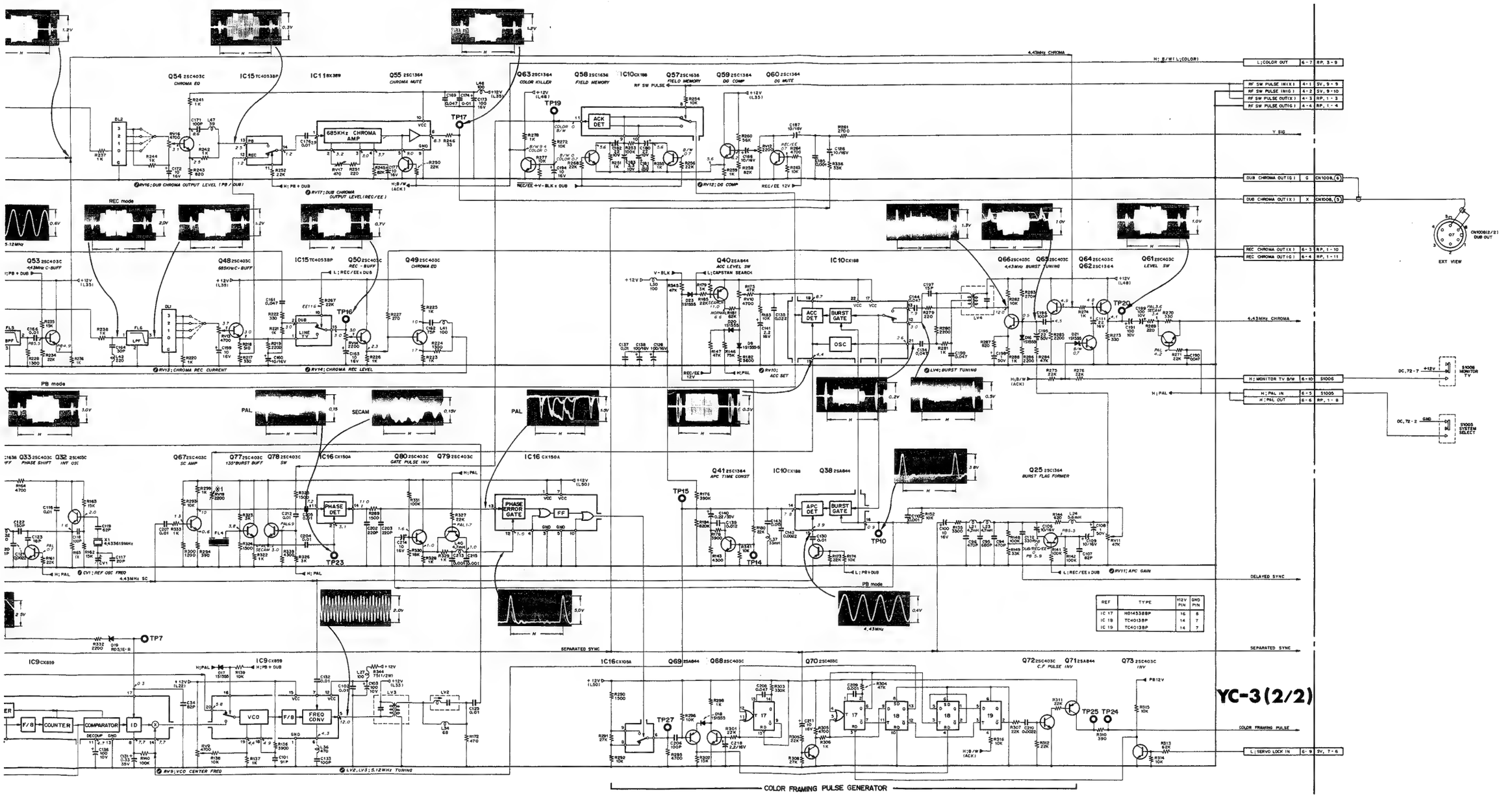
YC-3 (2/2)
(CHROMA CONVERTER)



NOTE:

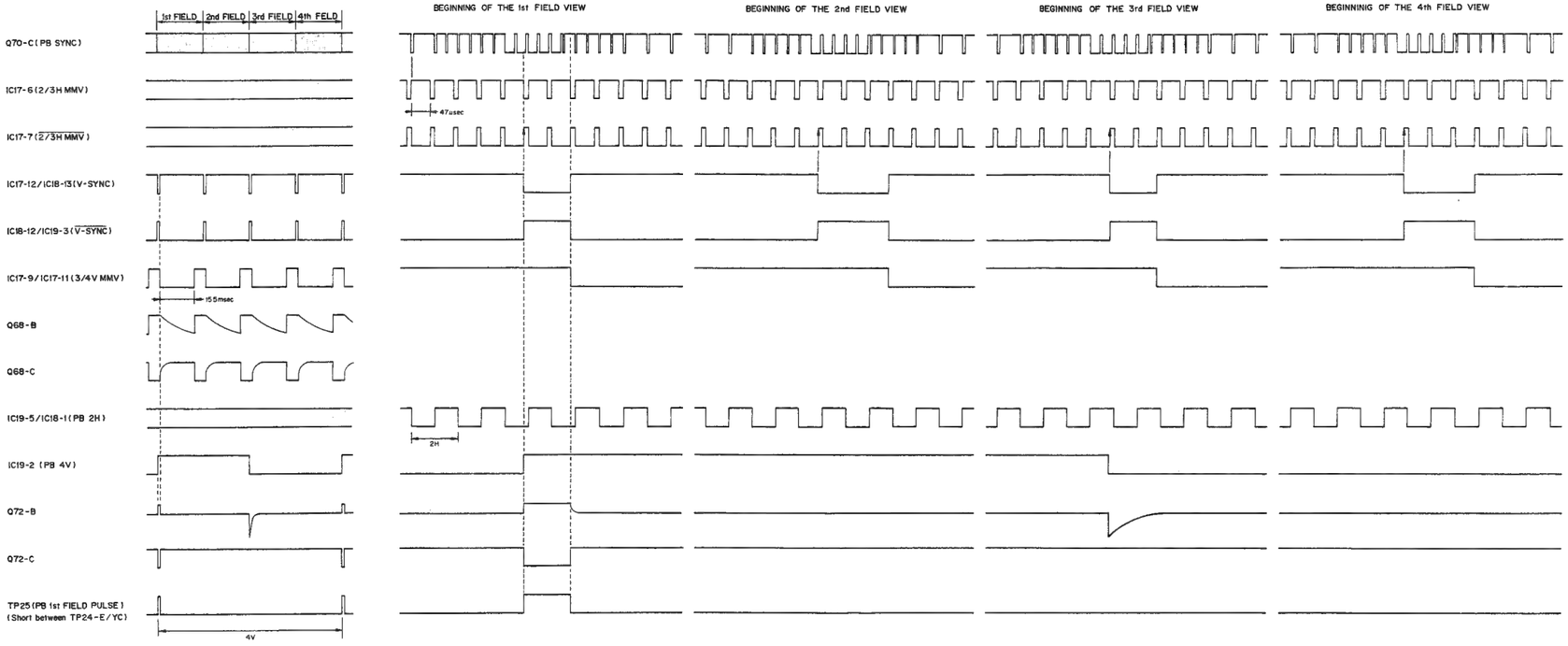
MARK	CHANGE INFORMATION	SERIAL NO.
※1	R297 1K DELETED ↓ RV19 2200 ADDED	AEP: 11151 ~ UK: 10851 ~
※2	C113 12P → 11P R157 470 → 680	AEP: 14251 ~ UK: 11151 ~
※3	R500 620K ADDED	AEP: 14401 ~ UK: 11301 ~

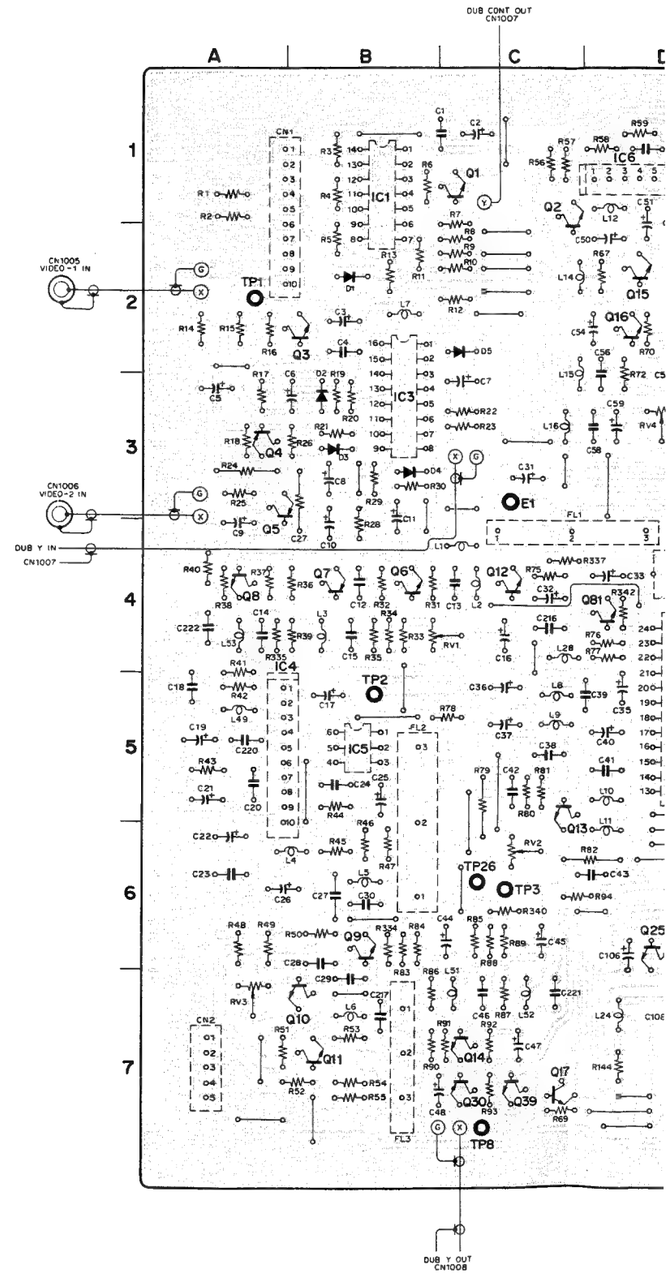
19 - 22 Leaf

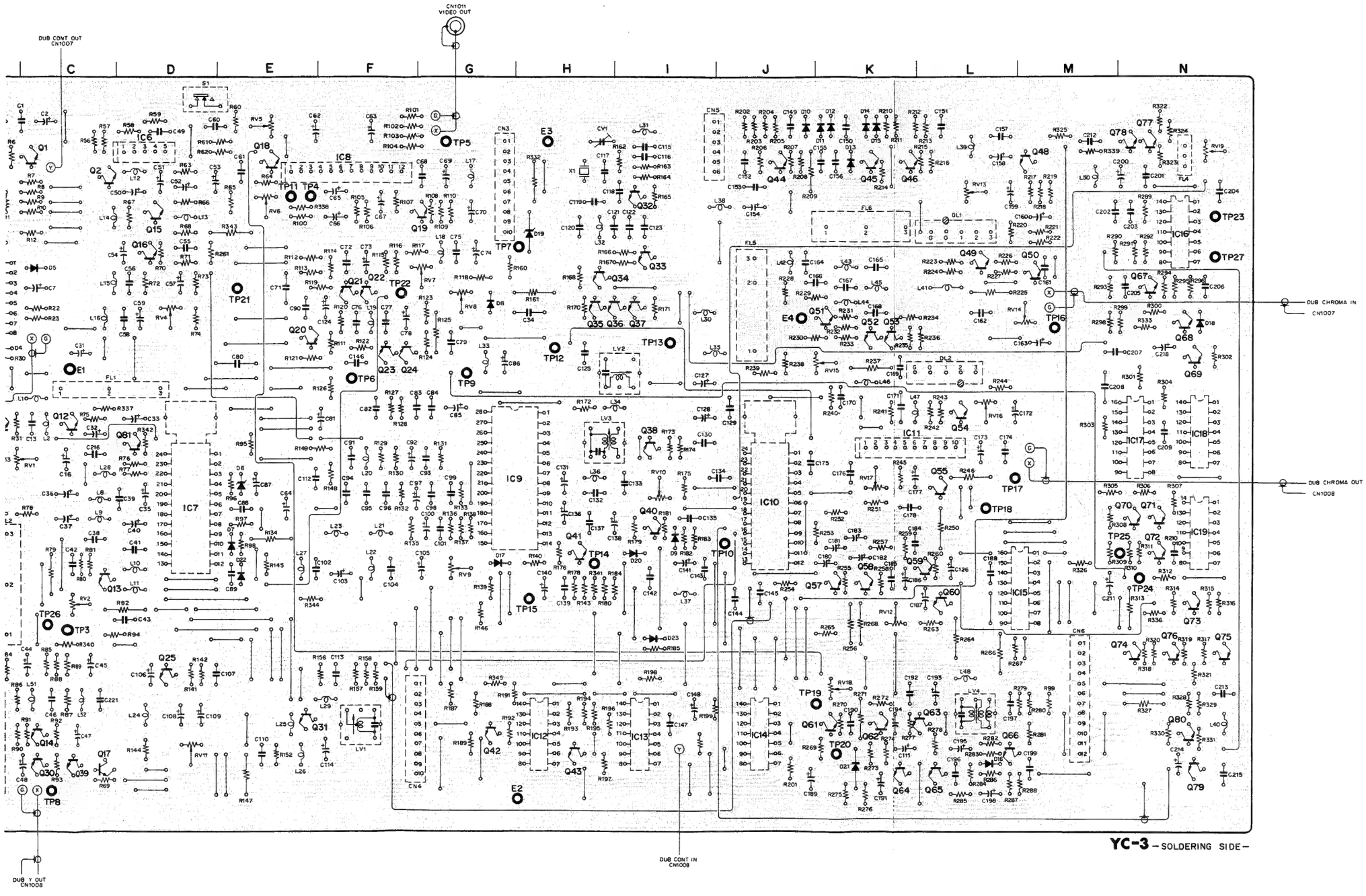

Q54 2SC403C CHROMA EO
IC15 TC4053BP
IC11 BX389
Q55 2SC1364 CHROMA MUTE
685KHz CHROMA AMP
Q63 2SC1364 COLOR KILLER
Q58 2SC1636 FIELD MEMORY
IC10 CX188
Q57 2SC1636 FIELD MEMORY
Q59 2SC1364 DG COMP
Q60 2SC1364 DG MUTE
ACK DET
TP19
TP17
RF SW PULSE
4.43MHz CHROMA
H; B/W (L; COLOR)
L; COLOR OUT 6-7 RP, 3-9
RF SW PULSE IN(+) 4-1 SV, 9-9
RF SW PULSE IN(-) 4-2 SV, 9-10
RF SW PULSE OUT(+) 4-3 RP, 1-3
RF SW PULSE OUT(-) 4-4 RP, 1-4
Y SIG
DUB CHROMA OUT(G) G CN1008,(4)
DUB CHROMA OUT(+) X CN1008,(3)
CN1008(2/2) DUB OUT
EXT VIEW
REC CHROMA OUT(+) 6-3 RP, 1-10
REC CHROMA OUT(-) 6-4 RP, 1-11
RV16; DUB CHROMA OUTPUT LEVEL (PB / DUB)
RV17; DUB CHROMA OUTPUT LEVEL (REC/EE)
H; PB + DUB
H; B/W (ACK)
REC/EE +V-BLK x DUB
RV12; DG COMP
REC/EE 12V
REC mode
Q53 2SC403C 4.43MHz C-BUFF
Q48 2SC403C 685KHz C-BUFF
IC15 TC4053BP
Q50 2SC403C REC - BUFF
Q49 2SC403C CHROMA EO
L; REC/EE x DUB
TP16
RV13; CHROMA REC CURRENT
RV14; CHROMA REC LEVEL
Q40 2SA844 ACC LEVEL SW
L; CAPSTAN SEARCH
IC10 CX188
Q66 2SC403C
Q65 2SC403C
4.43MHz BURST TUNING
Q64 2SC403C
Q62 2SC1364
Q61 2SC403C LEVEL SW
TP20
ACC DET
BURST GATE
OSC
RV10; ACC SET
LV4; BURST TUNING
4.43MHz CHROMA
H; MONITOR TV B/W 6-10 S1005
H; PAL IN 6-5 S1005
H; PAL OUT 6-6 RP, 1-8
DC, 72-7 +12V
S1005 MONITOR TV
DC, 72-2 GND
S1005 SYSTEM SELECT
PB mode
PAL
SECAM
Q67 2SC403C SC AMP
Q77 2SC403C 135°BURST BUFF
Q78 2SC403C SW
IC16 CX150A
Q80 2SC403C GATE PULSE INV
Q79 2SC403C
PHASE DET
PHASE ERROR GATE
FF
TP23
H; PAL
CV1; REF OSC FREQ
4.43MHz SC
Q41 2SC1364 APC TIME CONST
IC10 CX188
Q38 2SA844
APC DET
BURST GATE
TP15
TP10
TP14
Q25 2SC1364 BURST FLAG FORMER
RV11; APC GAIN
L; REC/EE x DUB
L; PB + DUB
DELAYED SYNC
SEPARATED SYNC
REF TYPE +12V PIN GND PIN
IC 17 HD14538BP 16 8
IC 18 TC4013BP 14 7
IC 19 TC4013BP 14 7
IC9 CX859
F/D
COUNTER
COMPARATOR
ID
VCO
F/D
FREQ CONV
RV9; VCO CENTER FREQ
LV2, LV3; 5.12MHz TUNING
IC16 CX150A
Q69 2SA844
Q68 2SC403C
Q70 2SC403C
Q72 2SC403C C.F PULSE INV
Q71 2SA844
Q73 2SC403C INV
TP27
TP25
TP24
COLOR FRAMING PULSE
L; SERVO LOCK IN 6-9 SV, 7-6
COLOR FRAMING PULSE GENERATOR
YC-3 (2/2)

YC-3
(Y/C MOD/DEMODULATOR)

S/N UP TO 14250 (AEP)
S/N UP TO 11150 (UK)



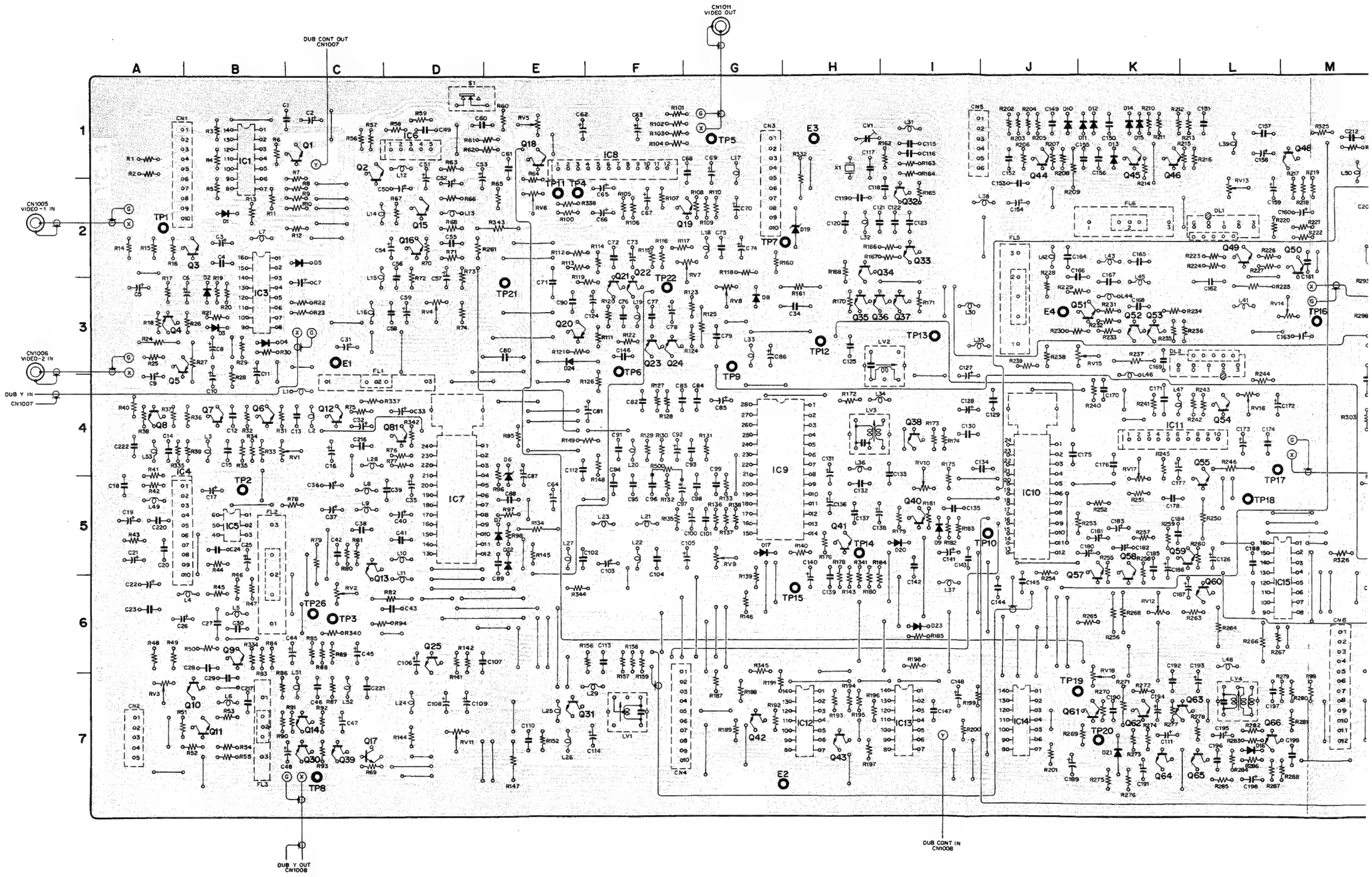




CN1	A - 1	Q1	C - 1	RV1	B - 4
CN2	A - 7	Q2	C - 1	RV2	C - 6
CN3	G - 1	Q3	B - 2	RV3	A - 7
CN4	F - 7	Q4	A - 3	RV4	D - 3
CN5	I - 1	Q5	A - 3	RV5	E - 1
CN6	M - 7	Q6	B - 4	RV6	E - 2
		Q7	B - 4	RV7	G - 2
CV1	H - 1	Q8	A - 4	RV8	G - 3
		Q9	B - 6	RV9	G - 5
D1	B - 2	Q10	B - 7	RV10	I - 4
D2	B - 3	Q11	B - 7	RV11	D - 7
D3	B - 3	Q12	C - 4	RV12	K - 6
D4	B - 3	Q13	C - 5	RV13	L - 2
D5	C - 2	Q14	C - 7	RV14	M - 3
D6	E - 5	Q15	D - 2	RV15	K - 3
D7	E - 5	Q16	D - 2	RV16	L - 4
D8	G - 3	Q17	C - 7	RV17	K - 4
D9	I - 5	Q18	E - 1	RV18	K - 7
D10	J - 1	Q19	G - 2	RV19	N - 1
D11	K - 1	Q20	E - 3		
D12	K - 1	Q21	F - 3	S1	D - 1
D13	K - 1	Q22	F - 3		
D14	K - 1	Q23	F - 3	TP1	A - 2
D15	K - 1	Q24	F - 3	TP2	B - 5
D16	L - 7	Q25	F - 6	TP3	C - 6
D17	G - 5	Q30	C - 7	TP4	E - 2
D18	N - 3	Q31	E - 7	TP5	G - 1
D19	H - 2	Q32	I - 2	TP6	F - 3
D20	I - 5	Q33	I - 2	TP7	H - 2
D21	K - 7	Q34	H - 2	TP8	C - 7
D22	E - 5	Q35	H - 3	TP9	G - 3
D23	I - 6	Q36	H - 3	TP10	J - 5
		Q37	I - 3	TP11	E - 2
DL1	L - 2	Q38	I - 4	TP12	H - 3
DL2	L - 3	Q39	C - 7	TP13	I - 3
		Q40	I - 5	TP14	H - 5
E1	C - 3	Q41	H - 5	TP15	H - 6
E2	G - 7	Q42	G - 7	TP16	M - 3
E3	H - 1	Q43	H - 7	TP17	L - 4
E4	J - 3	Q44	J - 1	TP18	L - 5
		Q45	K - 1	TP19	J - 7
FL1	C - 4	Q46	K - 1	TP20	K - 7
FL2	B - 5	Q48	M - 1	TP21	E - 3
FL3	B - 7	Q49	L - 2	TP22	F - 3
FL4	N - 1	Q50	M - 2	TP23	N - 2
FL5	J - 3	Q51	K - 3	TP24	N - 5
FL6	K - 2	Q52	K - 3	TP25	N - 5
		Q53	K - 3	TP26	C - 6
IC1	B - 1	Q54	L - 4	TP27	N - 2
IC3	B - 3	Q55	L - 5		
IC4	A - 5	Q57	K - 6	X1	H - 1
IC5	B - 5	Q58	K - 6		
IC6	D - 1	Q59	L - 5		
IC7	D - 5	Q60	L - 6		
IC8	F - 1	Q61	K - 7		
IC9	G - 4	Q62	K - 7		
IC10	J - 5	Q63	L - 7		
IC11	K - 4	Q64	L - 7		
IC12	H - 7	Q65	L - 7		
IC13	I - 7	Q66	N - 2		
IC14	J - 7	Q67	N - 3		
IC15	L - 6	Q68	N - 3		
IC16	N - 2	Q69	N - 5		
IC17	N - 4	Q70	N - 5		
IC18	N - 4	Q71	N - 5		
IC19	N - 5	Q72	N - 5		
		Q73	N - 6		
LV1	F - 7	Q74	N - 6		
LV2	I - 3	Q75	N - 6		
LV3	H - 4	Q76	N - 6		
LV4	L - 7	Q77	N - 1		
		Q78	N - 1		
		Q79	N - 7		
		Q80	N - 7		
		Q81	D - 4		

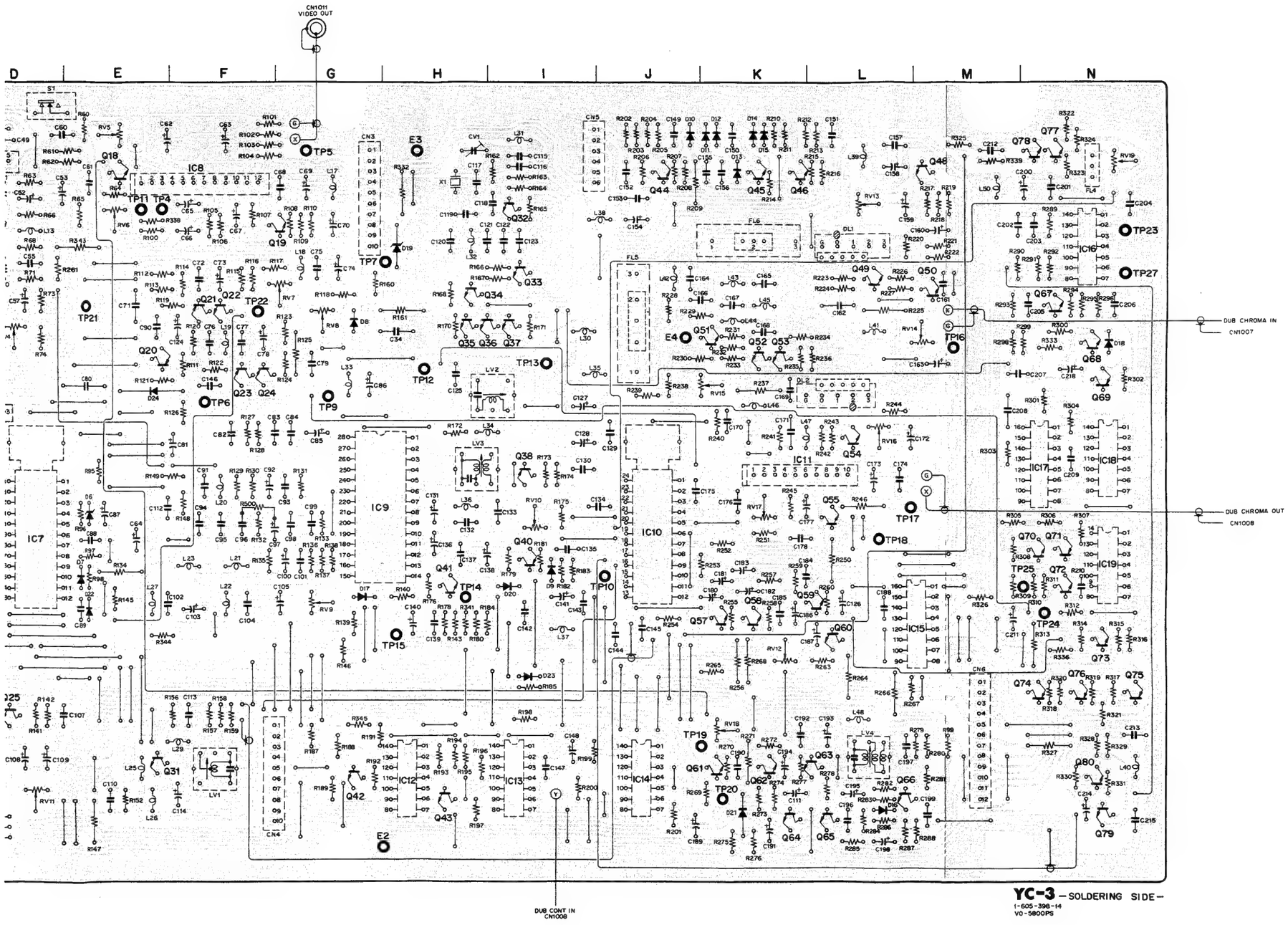
YC-3 (Y/C MOD/DEMODULATOR)

S/N 14251 AND LATER (AEP)
S/N 11151 AND LATER (UK)



13-28 (b)

13-29 (b)

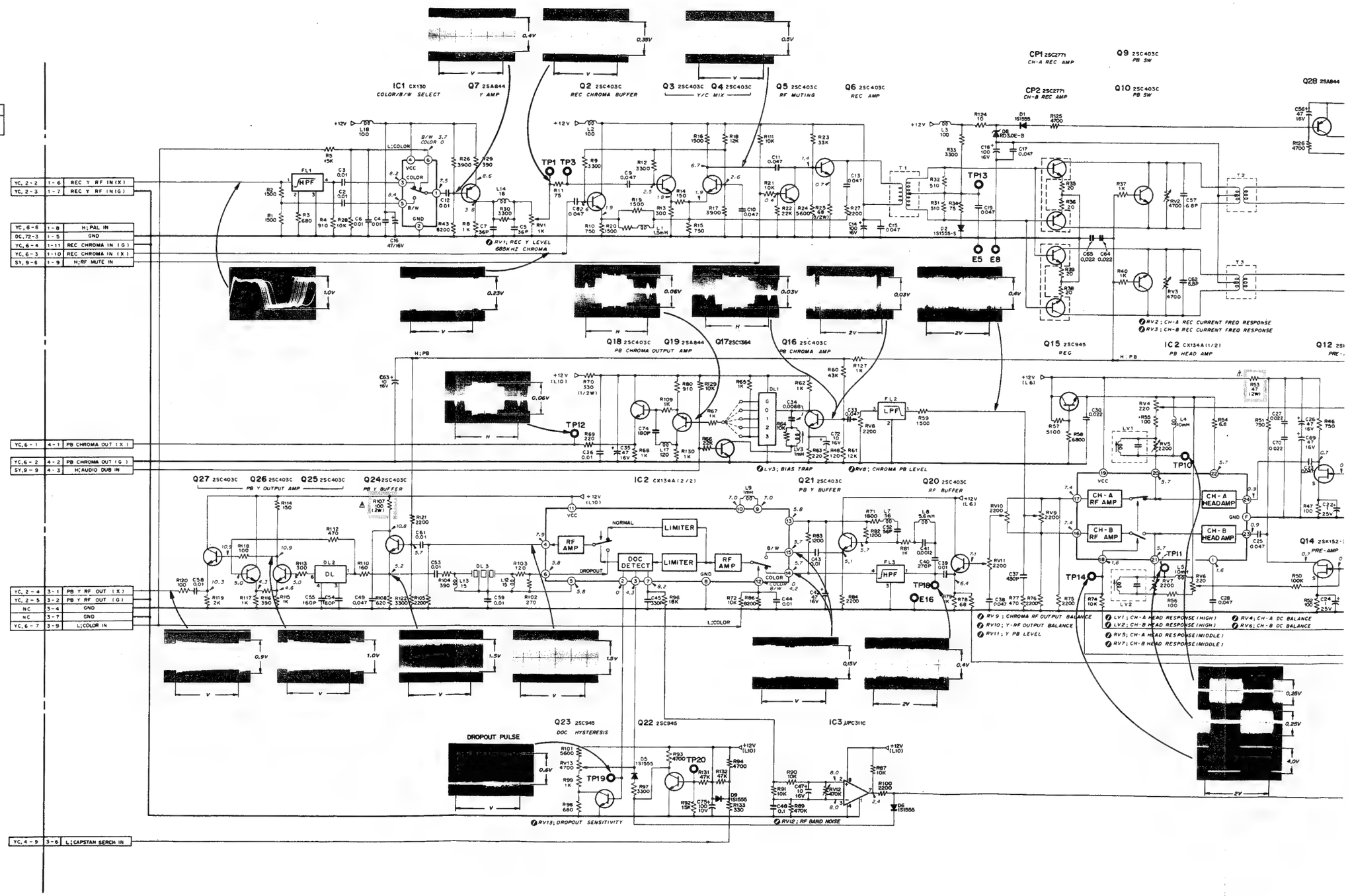


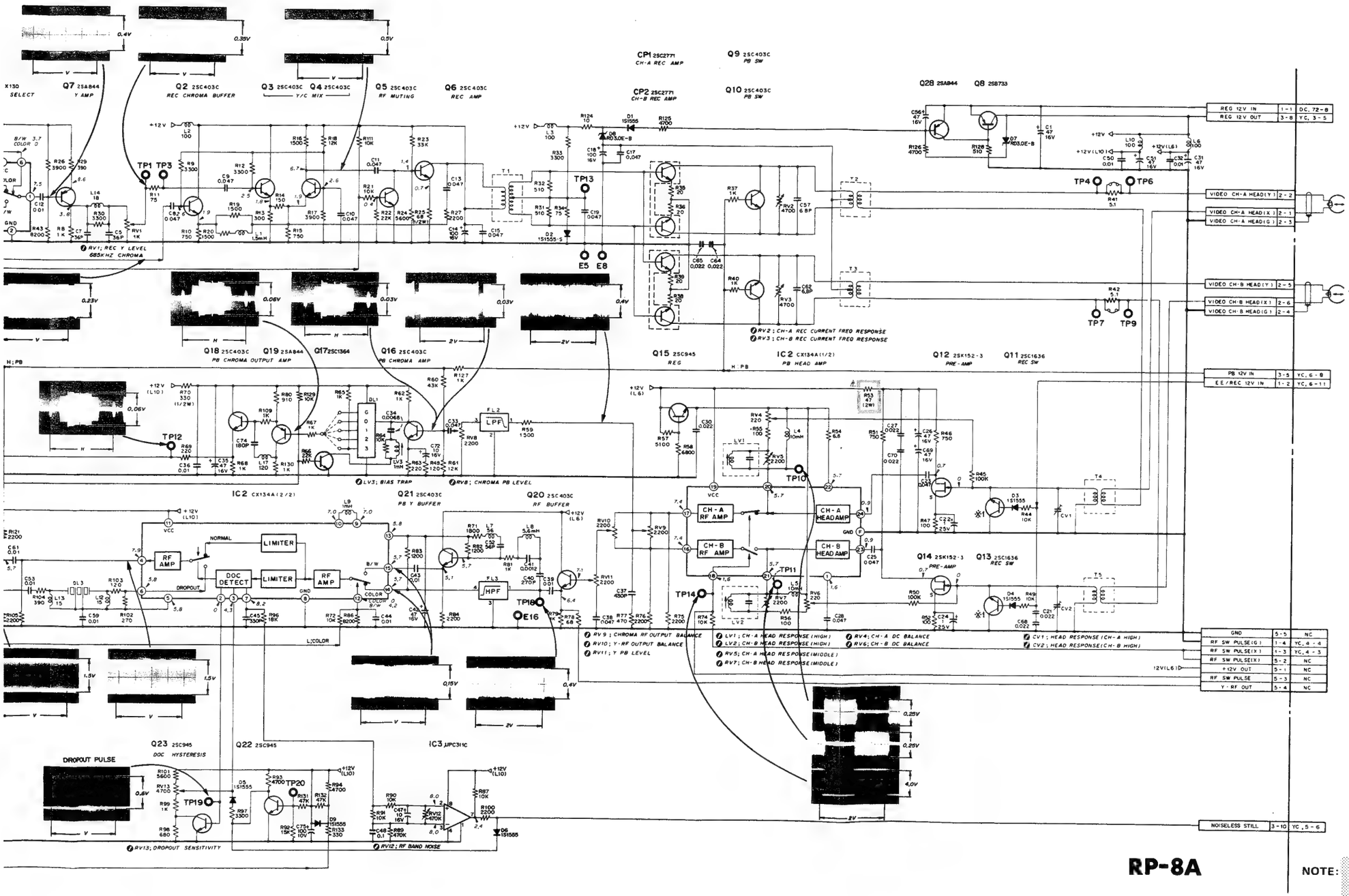
CN1	A-1	Q1	C-1	RV1	B-4		
CN2	A-7	Q2	C-1	RV2	C-6		
CN3	G-1	Q3	B-2	RV3	A-7		
CN4	F-7	Q4	A-3	RV4	D-3		
CN5	I-1	Q5	A-3	RV5	E-1		
CN6	M-7	Q6	B-4	RV6	E-2		
		Q7	B-4	RV7	G-2		
CV1	H-1	Q8	A-4	RV8	G-3		
		Q9	B-6	RV9	G-5		
D1	B-2	Q10	B-7	RV10	I-4		
D2	B-3	Q11	B-7	RV11	D-7		
D3	B-3	Q12	C-4	RV12	K-6		
D4	B-3	Q13	C-5	RV13	L-2		
D5	C-2	Q14	C-7	RV14	M-3		
D6	E-5	Q15	D-2	RV15	K-3		
D7	E-5	Q16	D-2	RV16	L-4		
D8	G-3	Q17	C-7	RV17	K-4		
D9	I-5	Q18	E-1	RV18	K-7		
D10	J-1	Q19	G-2	RV19	N-1		
D11	K-1	Q20	E-3				
D12	K-1	Q21	F-3	S1	D-1		
D13	K-1	Q22	F-3				
D14	K-1	Q23	F-3	TP1	A-2		
D15	K-1	Q24	F-3	TP2	B-5		
D16	L-7	Q25	D-6	TP3	C-6		
D17	G-5	Q30	C-7	TP4	E-2		
D18	N-3	Q31	E-7	TP5	G-1		
D19	H-2	Q32	I-2	TP6	F-3		
D20	I-5	Q33	I-2	TP7	H-2		
D21	K-7	Q34	H-2	TP8	C-7		
D22	E-5	Q35	H-3	TP9	G-3		
D23	I-6	Q36	H-3	TP10	J-5		
D24	E-3	Q37	I-3	TP11	E-2		
		Q38	I-4	TP12	H-3		
DL1	L-2	Q39	C-7	TP13	I-3		
DL2	L-3	Q40	I-5	TP14	H-5		
		Q41	H-5	TP15	H-6		
E1	C-3	Q42	G-7	TP16	M-3		
E2	G-7	Q43	H-7	TP17	L-4		
E3	H-1	Q44	J-1	TP18	L-5		
E4	J-3	Q45	K-1	TP19	J-7		
		Q46	K-1	TP20	K-7		
FL1	C-4	Q48	M-1	TP21	E-3		
FL2	B-5	Q49	L-2	TP22	F-3		
FL3	B-7	Q50	M-2	TP23	N-2		
FL4	N-1	Q51	K-3	TP24	N-5		
FL5	J-3	Q52	K-3	TP25	N-5		
FL6	K-2	Q53	K-3	TP26	C-6		
		Q54	L-4	TP27	N-2		
IC1	B-1	Q55	L-5				
IC3	B-3	Q57	K-6	X1	H-1		
IC4	A-5	Q58	K-6				
IC5	B-5	Q59	L-5				
IC6	D-1	Q60	L-6				
IC7	D-5	Q61	K-7				
IC8	F-1	Q62	K-7				
IC9	G-4	Q63	L-7				
IC10	J-5	Q64	K-7				
IC11	K-4	Q65	L-7				
IC12	H-7	Q66	L-7				
IC13	I-7	Q67	N-2				
IC14	J-7	Q68	N-3				
IC15	L-6	Q69	N-3				
IC16	N-2	Q70	N-5				
IC17	N-4	Q71	N-5				
IC18	N-4	Q72	N-5				
IC19	N-5	Q73	N-6				
		Q74	N-6				
LV1	F-7	Q75	N-6				
LV2	I-3	Q76	N-6				
LV3	H-4	Q77	N-1				
LV4	L-7	Q78	N-1				
		Q79	N-7				
		Q80	N-7				
		Q81	D-4				

RP-8A
(VIDEO REC/PB AMPLIFIER)

NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C66, C67 5.6P DELETED	AEP: 12151 ~ UK: 10751 ~



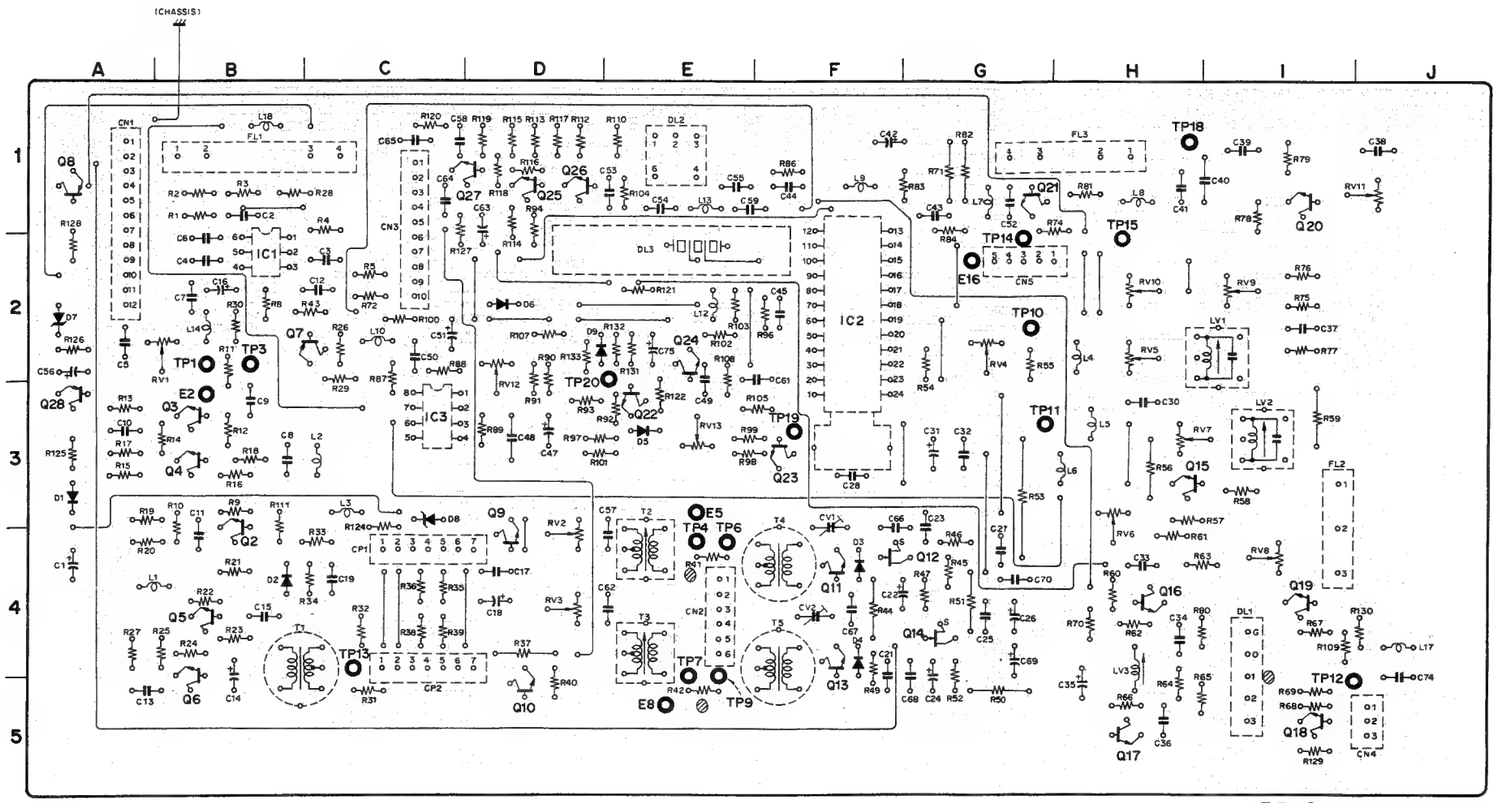


RP-8A

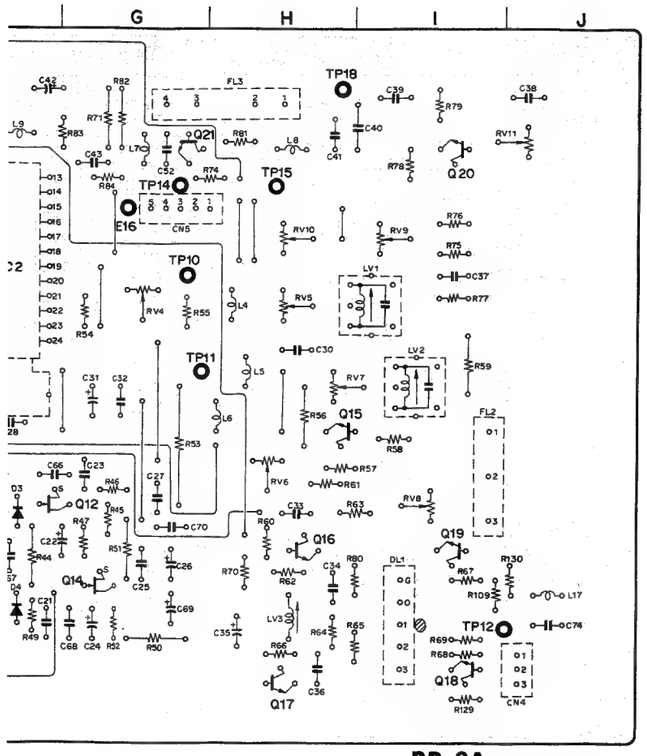
NOTE: The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

RP-8A
(VIDEO REC/PB AMPLIFIER)

S/N UP TO 14250 (AEP)
S/N UP TO 11150 (UK)



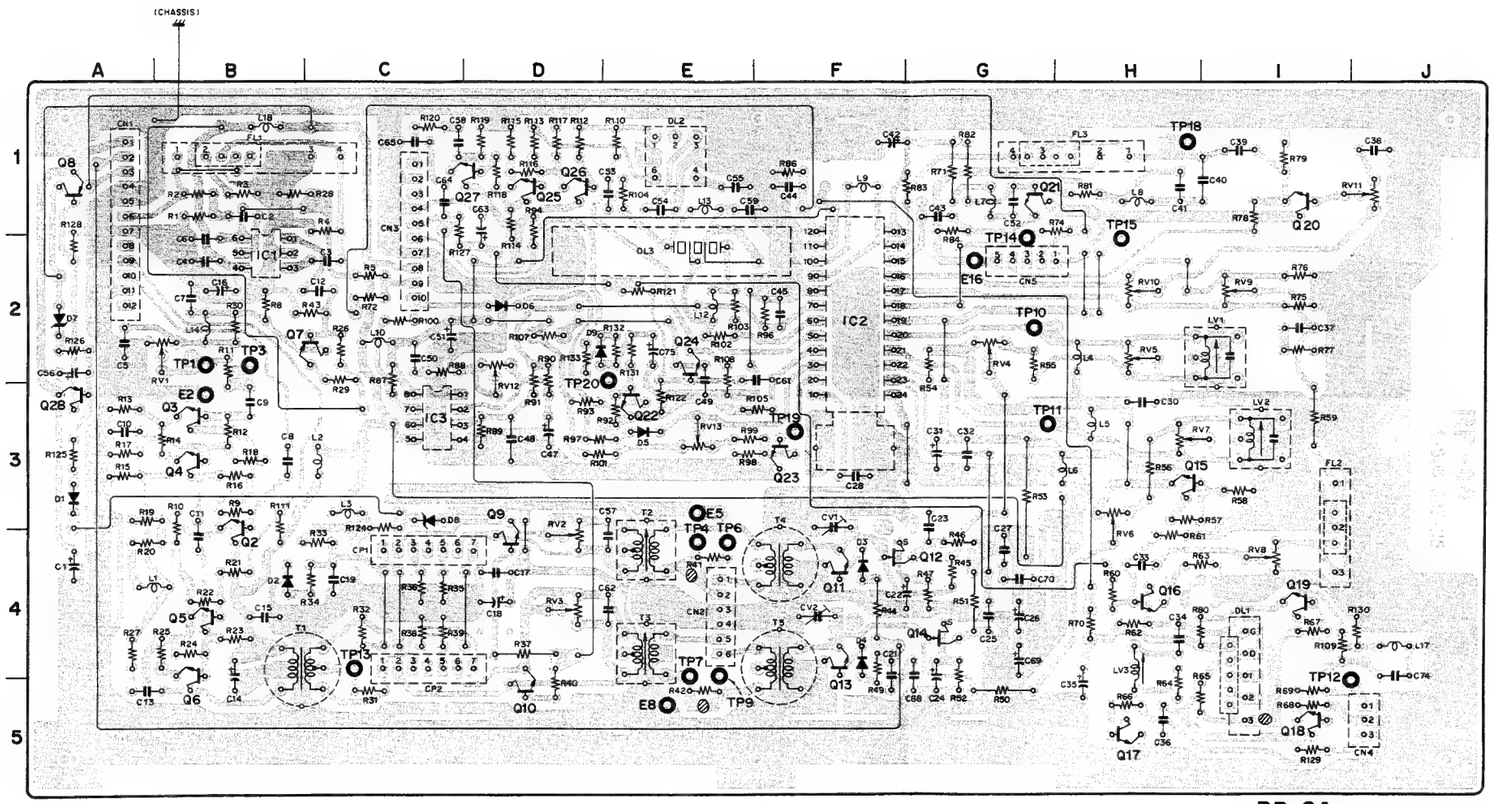
RP-8A –SOLDERING SIDE–



RP-8A –SOLDERING SIDE–

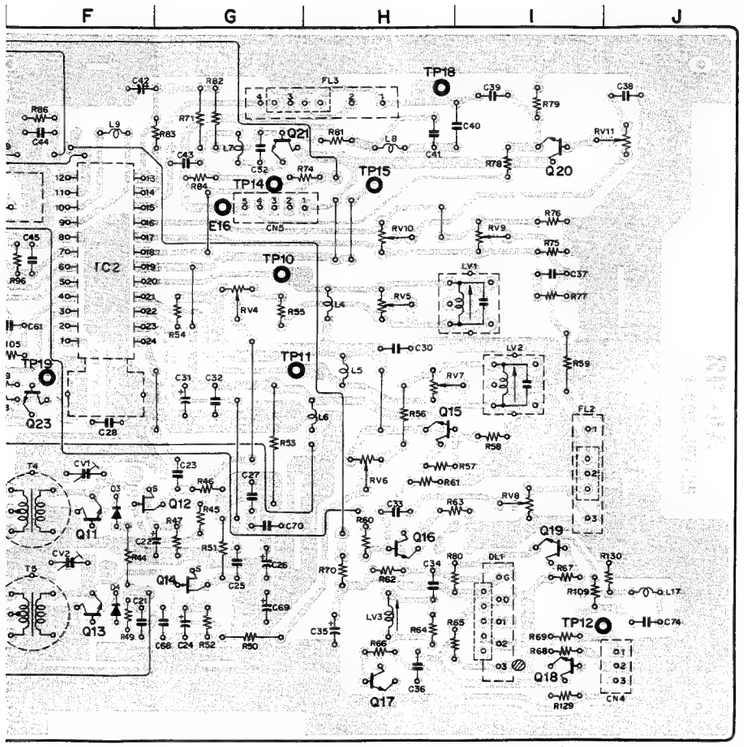
RP-8A (VIDEO REC/PB AMPLIFIER)

S/N 14251 AND LATER (AEP)
S/N 11151 AND LATER (UK)



RP-8A –SOLDERING SIDE–
1-605-397-25
VO-5800PS

CN1	A-1	Q2	B-4	RV1	B-2	TP1	B-2
CN2	E-4	Q3	B-3	RV2	D-4	TP3	B-2
CN3	C-1	Q4	B-3	RV3	D-4	TP4	E-4
CN4	J-5	Q5	B-4	RV4	G-2	TP6	E-4
CN5	G-2	Q6	B-5	RV5	H-2	TP7	E-4
		Q7	C-2	RV6	H-3	TP9	E-5
CP1	C-4	Q8	A-1	RV7	H-3	TP10	G-2
CP2	C-4	Q9	D-4	RV8	I-4	TP11	G-3
		Q10	D-5	RV9	I-2	TP12	J-5
CV1	F-4	Q11	F-4	RV10	H-2	TP13	C-4
CV2	F-4	Q12	F-4	RV11	J-1	TP14	G-2
		Q13	F-4	RV12	D-2	TP15	H-2
D1	A-3	Q14	G-4	RV13	E-3	TP18	H-1
D2	B-4	Q15	H-3			TP19	F-3
D3	F-4	Q16	H-4	T1	B-4	TP20	E-3
D4	F-4	Q17	H-5	T2	E-4		
D5	E-3	Q18	I-5	T3	E-4		
D6	D-2	Q19	I-4	T4	F-4		
D7	A-2	Q20	I-1	T5	F-4		
D8	C-3	Q21	G-1				
D9	D-2	Q22	E-3	TP1	B-2		
		Q23	F-3	TP3	B-2		
DL1	I-5	Q24	E-2	TP4	E-4		
DL2	E-1	Q25	D-1	TP6	E-4		
DL3	E-2	Q26	D-1	TP7	E-4		
		Q27	C-1	TP9	E-5		
E2	B-3	Q28	A-3	TP10	G-2		
E5	E-3			TP11	G-3		
E8	E-5			TP12	J-5		
E16	G-2			TP13	C-4		
				TP14	G-2		
FL1	B-1			TP15	H-2		
FL2	I-3			TP18	H-1		
FL3	H-1			TP19	F-3		
				TP20	E-3		
IC1	B-2						
IC2	F-2						
IC3	C-3						
LV1	I-2						
LV2	I-3						
LV3	H-4						



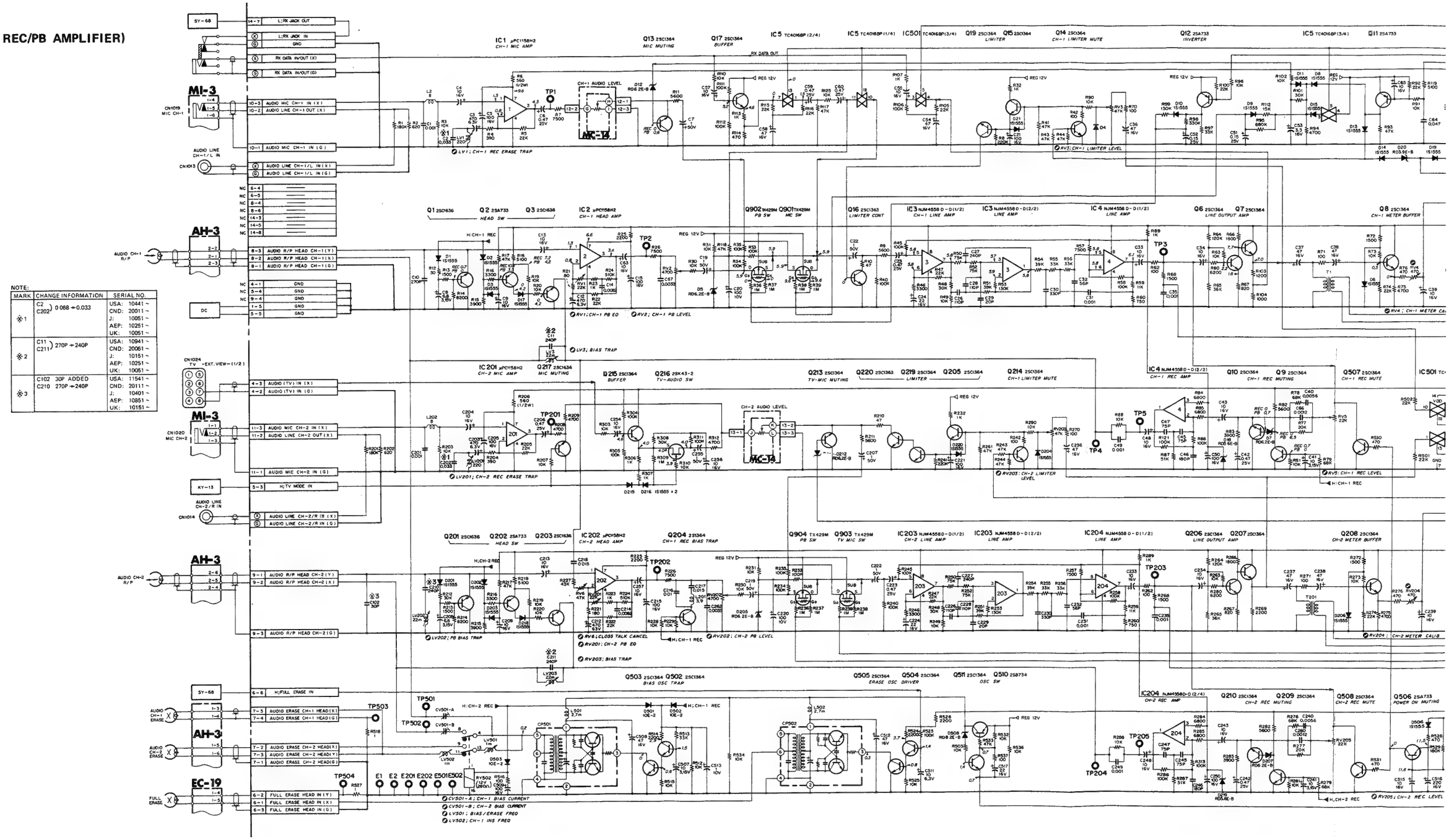
RP-8A –SOLDERING SIDE–
1-605-397-25
VO-5800PS

CN1	A-1
CN2	E-4
CN3	C-1
CN4	J-5
CN5	G-2
CP1	C-4
CP2	C-4
CV1	F-4
CV2	F-4
D1	A-3
D2	B-4
D3	F-4
D4	F-4
D5	E-3
D6	D-2
D7	A-2
D8	C-3
D9	D-2
DL1	I-5
DL2	E-1
DL3	E-2
E2	B-3
E5	E-3
E8	E-5
E16	G-2
FL1	B-1
FL2	I-3
FL3	H-1
IC1	B-2
IC2	F-2
IC3	C-3
LV1	I-2
LV2	I-3
LV3	H-4
Q2	B-4
Q3	B-3
Q4	B-3
Q5	B-4
Q6	B-5
Q7	C-2
Q8	A-1
Q9	D-4
Q10	D-5
Q11	F-4
Q12	F-4
Q13	F-4
Q14	G-4
Q15	H-3
Q16	H-4
Q17	H-5
Q18	I-5
Q19	I-4
Q20	I-1
Q21	G-1
Q22	E-3
Q23	F-3
Q24	E-2
Q25	D-1
Q26	D-1
Q27	C-1
Q28	A-3
RV1	B-2
RV2	D-4
RV3	D-4
RV4	G-2
RV5	H-2
RV6	H-3
RV7	H-3
RV8	I-4
RV9	I-2
RV10	H-2
RV11	J-1
RV12	D-2
RV13	E-3
T1	B-4
T2	E-4
T3	E-4
T4	F-4
T5	F-4
TP1	B-2
TP3	B-2
TP4	E-4
TP6	E-4
TP7	E-4
TP9	E-5
TP10	G-2
TP11	G-3
TP12	J-5
TP13	C-4
TP14	G-2
TP15	H-2
TP18	H-1
TP19	F-3
TP20	E-3

ADDED '84. 3

AU-21A AU-21A

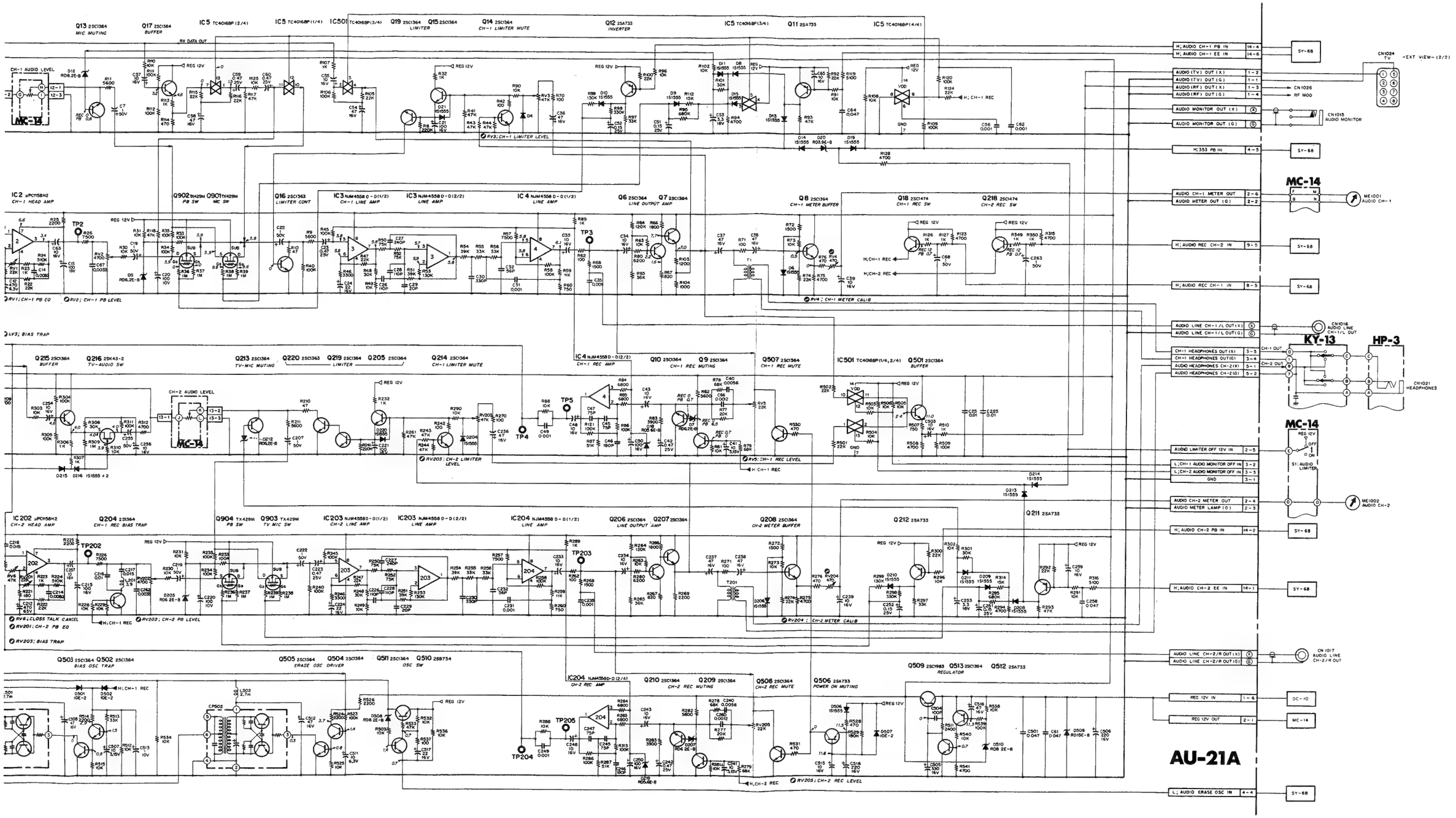
AU-21A
(AUDIO REC/PB AMPLIFIER)



NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C2, C202 0.068 → 0.033	USA: 10441 ~ CND: 20011 ~ J: 10051 ~ AEP: 10251 ~ UK: 10051 ~
※2	C11, C211 270P → 240P	USA: 10941 ~ CND: 20061 ~ J: 10151 ~ AEP: 10251 ~ UK: 10051 ~
※3	C102 30P ADDED C210 270P → 240P	USA: 11541 ~ CND: 20111 ~ J: 10401 ~ AEP: 10851 ~ UK: 10151 ~

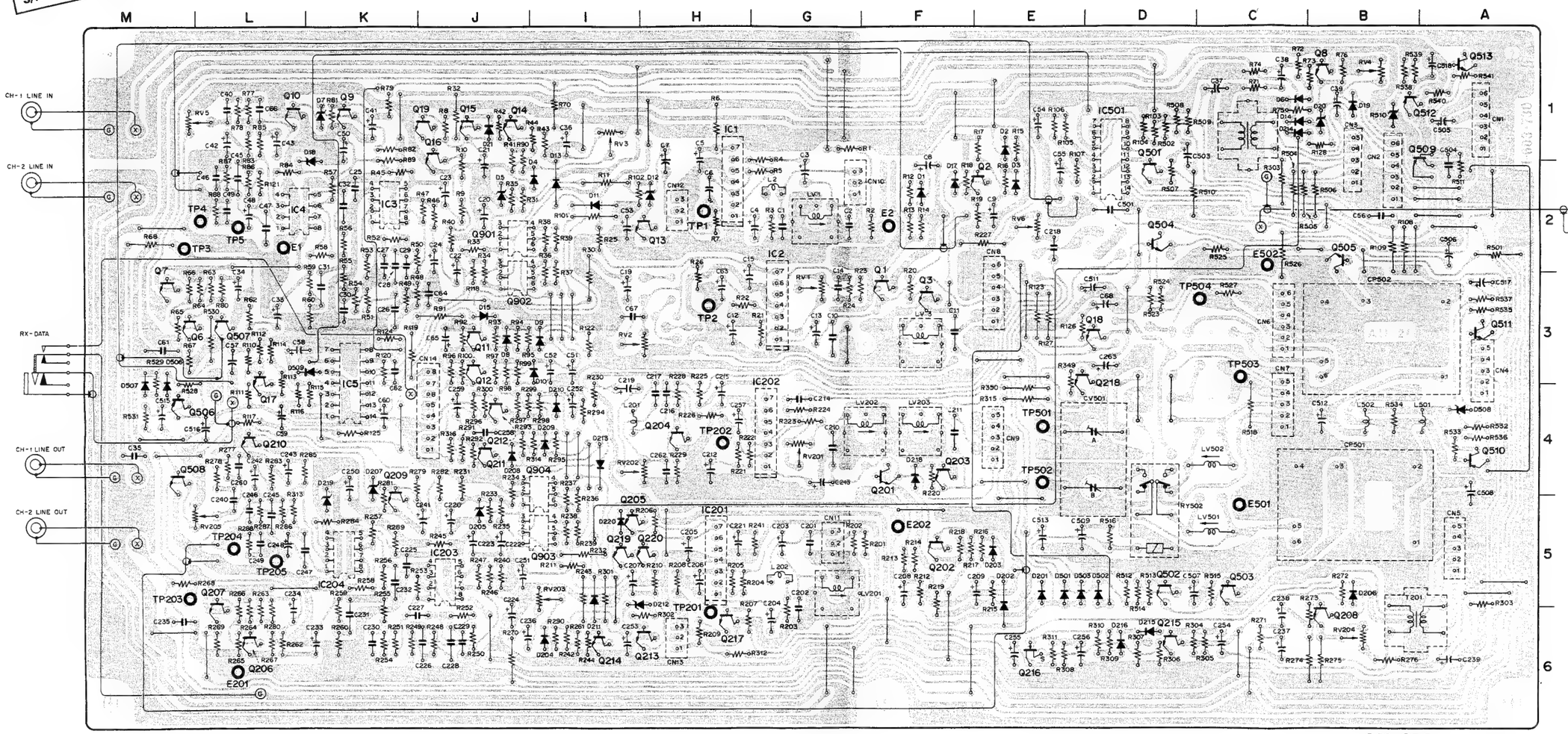
AU-21A AU-21A



NOTE: **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

AU-21A
(AUDIO REC/PB AMPLIFIER)

S/N UP TO 10100 (AEP)
S/N UP TO 10050 (UK)

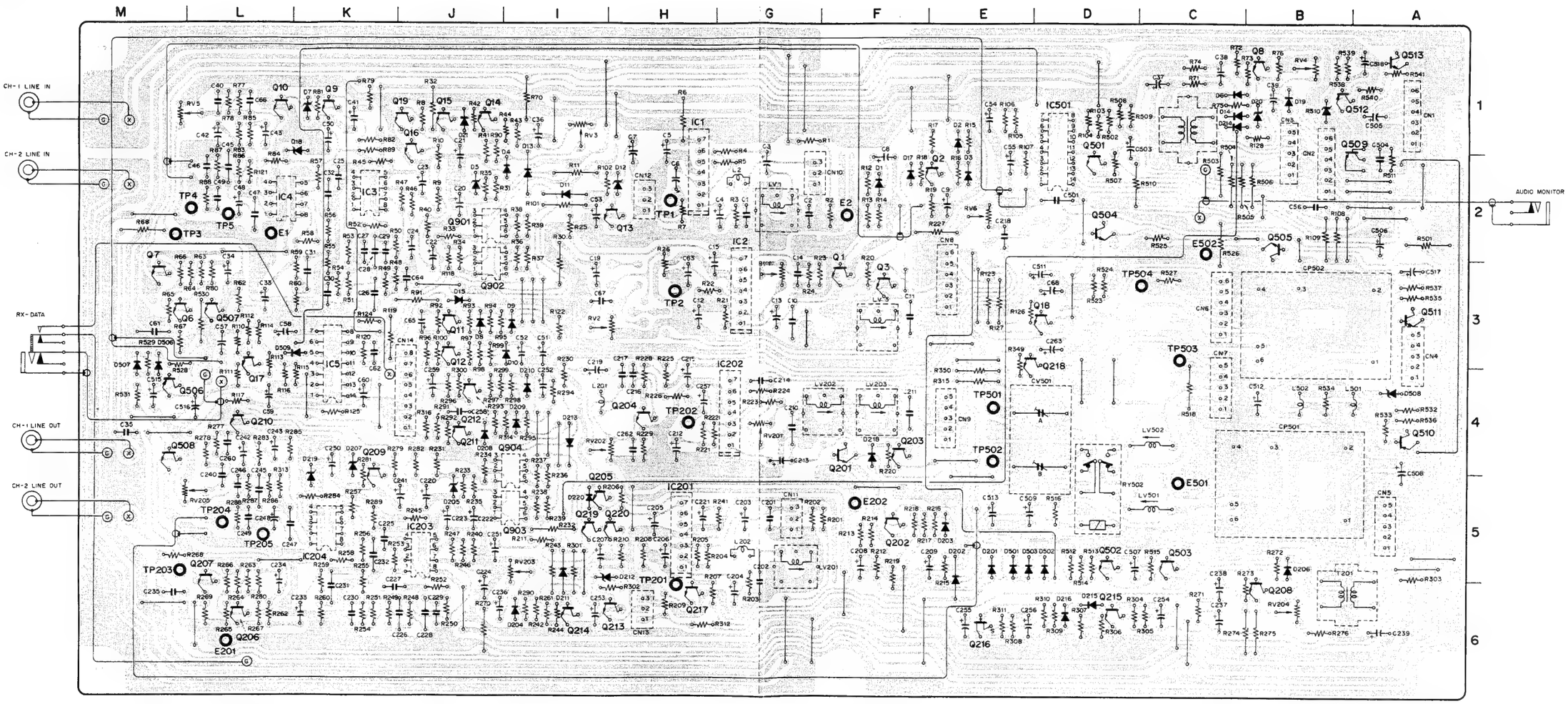


AU-21A – SOLDERING SIDE –

CN1	A-1	D1	F-1	D201	E-5	D501	E-5	IC1	H-2	Q1	F-3	Q201	F-4	Q501	D-2	RV1	G-3	TP1	H-2
CN2	B-2	D2	E-1	D202	E-5	D502	D-5	IC2	G-3	Q2	E-2	Q202	F-5	Q502	D-5	RV2	I-3	TP2	H-3
CN3	B-2	D3	E-2	D203	E-5	D503	E-5	IC3	K-2	Q3	F-3	Q203	F-4	Q503	C-5	RV3	I-1	TP3	M-2
CN4	A-3	D4	I-2	D204	I-6	D506	M-3	IC4	L-2	Q6	M-3	Q204	H-4	Q504	D-2	RV4	B-1	TP4	L-2
CN5	A-5	D5	J-2	D205	J-5	D507	M-3	IC5	K-4	Q7	M-3	Q205	I-5	Q505	B-2	RV5	L-1	TP5	L-2
CN6	C-3	D6	B-1	D206	B-5	D508	A-4	IC201	H-5	Q8	B-1	Q206	L-6	Q506	M-4	RV6	E-2	TP201	H-6
CN7	C-4	D7	K-1	D207	K-4	D509	L-3	IC202	G-4	Q9	K-1	Q207	L-6	Q507	L-3	RV201	G-4	TP202	H-4
CN8	E-3	D8	J-3	D208	J-4			IC203	J-5	Q10	L-1	Q208	B-6	Q508	M-4	RV202	I-4	TP203	M-5
CN9	E-4	D9	I-3	D209	I-4	E1	L-2	IC204	K-5	Q11	J-3	Q209	K-5	Q509	A-1	RV203	I-5	TP204	L-5
CN10	G-2	D10	I-3	D210	I-4	E2	F-1	IC501	D-2	Q12	J-3	Q210	L-4	Q510	A-4	RV204	B-6	TP205	L-5
CN11	G-5	D11	I-2	D211	I-5	E201	L-6			Q13	H-2	Q211	J-4	Q511	A-3	RV205	L-5	TP501	E-4
CN12	H-2	D12	H-2	D212	I-5	E202	F-5	LV1	G-2	Q14	J-1	Q212	J-4	Q512	A-1			TP502	E-4
CN13	H-6	D13	I-2	D213	I-4	E501	C-5	LV3	F-3	Q15	J-1	Q213	H-6	Q901	J-2	RY502	D-5	TP503	C-3
CN14	J-4	D14	B-1	D214	B-1	E502	C-2	LV201	G-5	Q16	L-3	Q214	I-6	Q902	J-3			TP504	C-3
		D15	J-3	D215	D-6			LV202	F-4	Q17	L-3	Q215	D-6	Q903	I-5	T1	C-1		
CP501	B-5	D17	F-2	D216	D-6			LV203	F-4	Q18	D-3	Q216	E-6	Q904	I-5	T201	B-6		
CP502	B-3	D18	K-2	D218	F-4			LV501	C-5	Q19	J-1	Q217	H-6						
		D19	B-1	D219	K-5			LV502	C-4			Q218	D-4						
CV501	D-4	D20	B-1	D220	I-5							Q219	I-5						
		D21	J-1									Q220	H-5						

AU-21A
(AUDIO REC/PB AMPLIFIER)

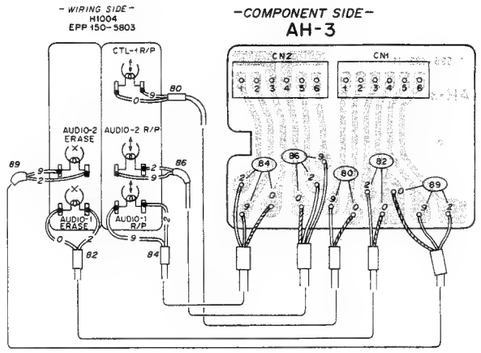
S/N 10101 AND LATER (AEP)
S/N 10051 AND LATER (UK)

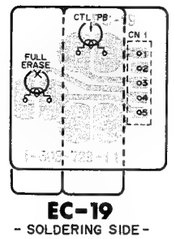


AU-21A – SOLDERING SIDE –

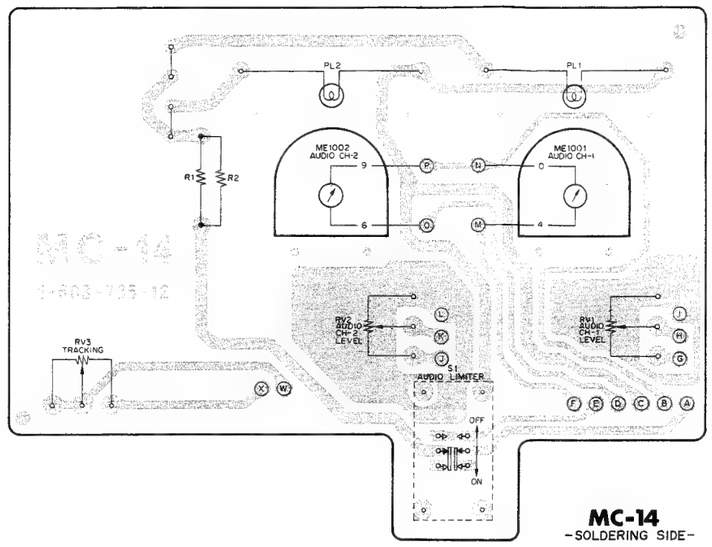
CN1	A-1	D1	F-1	D201	E-5	D501	E-5	IC1	H-2	Q1	F-3	Q201	F-4	Q501	D-2	RV1	G-3	TP1	H-2
CN2	B-2	D2	E-1	D202	E-5	D502	D-5	IC2	G-3	Q2	E-2	Q202	F-5	Q502	D-5	RV2	I-3	TP2	H-3
CN3	B-2	D3	E-2	D203	E-5	D503	E-5	IC3	K-2	Q3	F-3	Q203	F-4	Q503	C-5	RV3	I-1	TP3	M-2
CN4	A-3	D4	I-2	D204	I-6	D506	M-3	IC4	L-2	Q6	M-3	Q204	H-4	Q504	D-2	RV4	B-1	TP4	L-2
CN5	A-5	D5	J-2	D205	J-5	D507	M-3	IC5	K-4	Q7	M-3	Q205	I-5	Q505	B-2	RV5	L-1	TP5	L-2
CN6	C-3	D6	B-1	D206	B-5	D508	A-4	IC201	H-5	Q8	B-1	Q206	L-6	Q506	M-4	RV6	E-2	TP201	H-6
CN7	C-4	D7	K-1	D207	K-4	D509	L-3	IC202	G-4	Q9	K-1	Q207	L-6	Q507	L-3	RV201	G-4	TP202	H-4
CN8	E-3	D8	J-3	D208	J-4			IC203	J-5	Q10	L-1	Q208	B-6	Q508	M-4	RV202	I-4	TP203	M-5
CN9	E-4	D9	I-3	D209	I-4	E1	L-2	IC204	K-5	Q11	J-3	Q209	K-5	Q509	A-1	RV203	I-5	TP204	L-5
CN10	G-2	D10	I-3	D210	I-4	E2	F-1	IC501	D-2	Q12	J-3	Q210	L-4	Q510	A-4	RV204	B-6	TP205	L-5
CN11	G-5	D11	I-2	D211	I-5	E201	L-6			Q13	H-2	Q211	J-4	Q511	A-3	RV205	L-5	TP501	E-4
CN12	H-2	D12	H-2	D212	I-5	E202	F-5	LV1	G-2	Q14	J-1	Q212	J-4	Q512	A-1			TP502	E-4
CN13	H-6	D13	I-2	D213	I-4	E501	C-5	LV3	F-3	Q15	J-1	Q213	H-6	Q901	J-2	RY502	D-5	TP503	C-3
CN14	J-4	D14	B-1	D214	B-1	E502	C-2	LV201	G-5	Q16	L-3	Q214	I-6	Q902	J-3			TP504	C-3
		D15	J-3	D215	D-6			LV202	F-4	Q17	D-3	Q215	D-6	Q903	I-5	T1	C-1		
CP501	B-5	D17	F-2	D216	D-6			LV203	F-4	Q18	J-1	Q216	E-6	Q904	I-5	T201	B-6		
CP502	B-3	D18	K-2	D218	F-4			LV501	C-5	Q19	J-1	Q217	H-6						
		D19	B-1	D219	K-5			LV502	C-4			Q218	D-4						
CV501	D-4	D20	B-1	D220	I-5							Q219	I-5						
		D21	J-1									Q220	H-5						

AH-3 (AUDIO REC/PB/CTL HEAD)
EC-19 (ERASE/CTL PB HEAD)

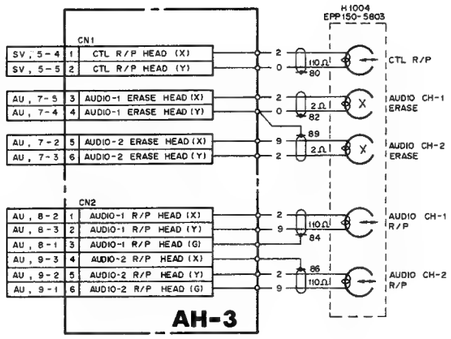




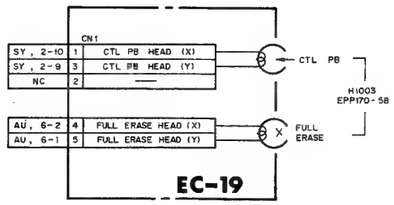
EC-19
- SOLDERING SIDE -



MC-14
- SOLDERING SIDE -

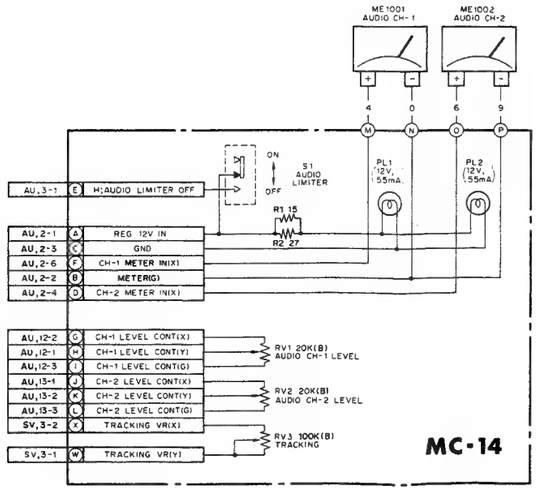


AH-3



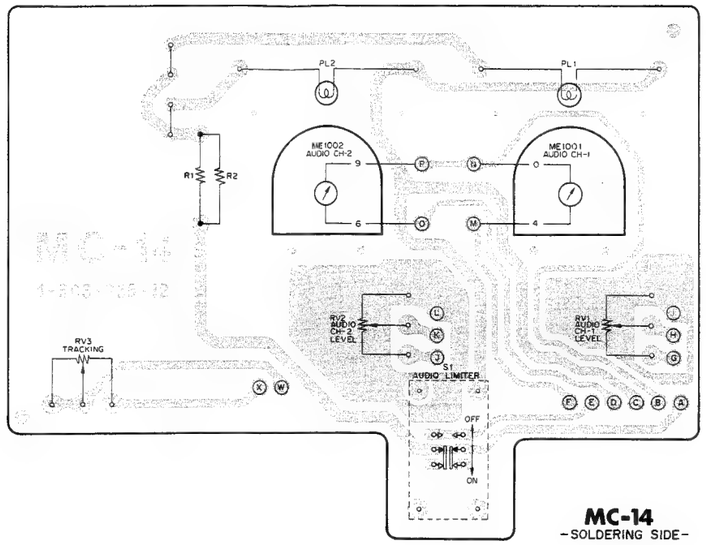
EC-19

MC-14
(AUDIO METER/TRACKING CONTROL)

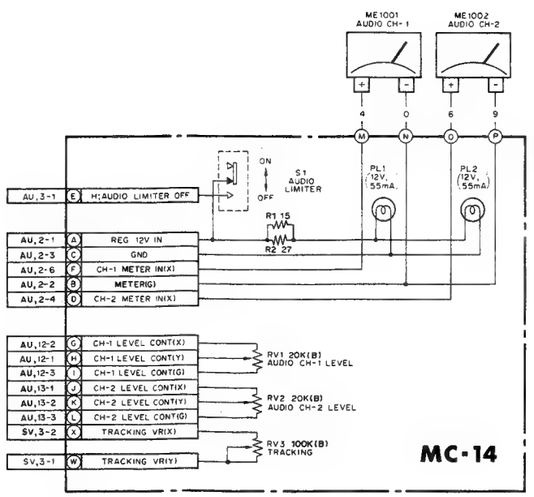


MC-14

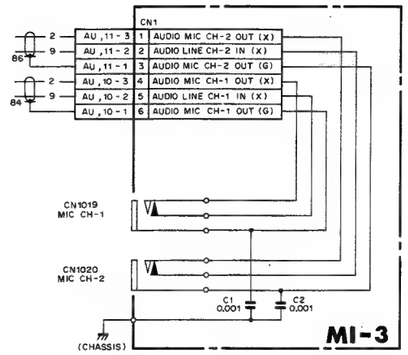
MC-14
(AUDIO METER/TRACKING CONTROL)

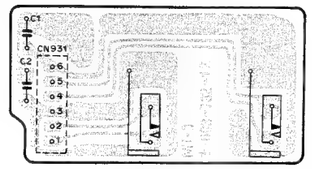


MC-14
-SOLDERING SIDE-

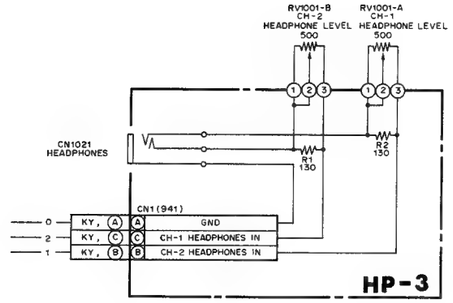


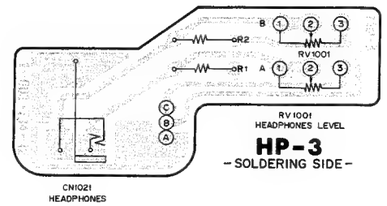
MI-3 (MIC INPUT)
HP-3 (HEADPHONES)





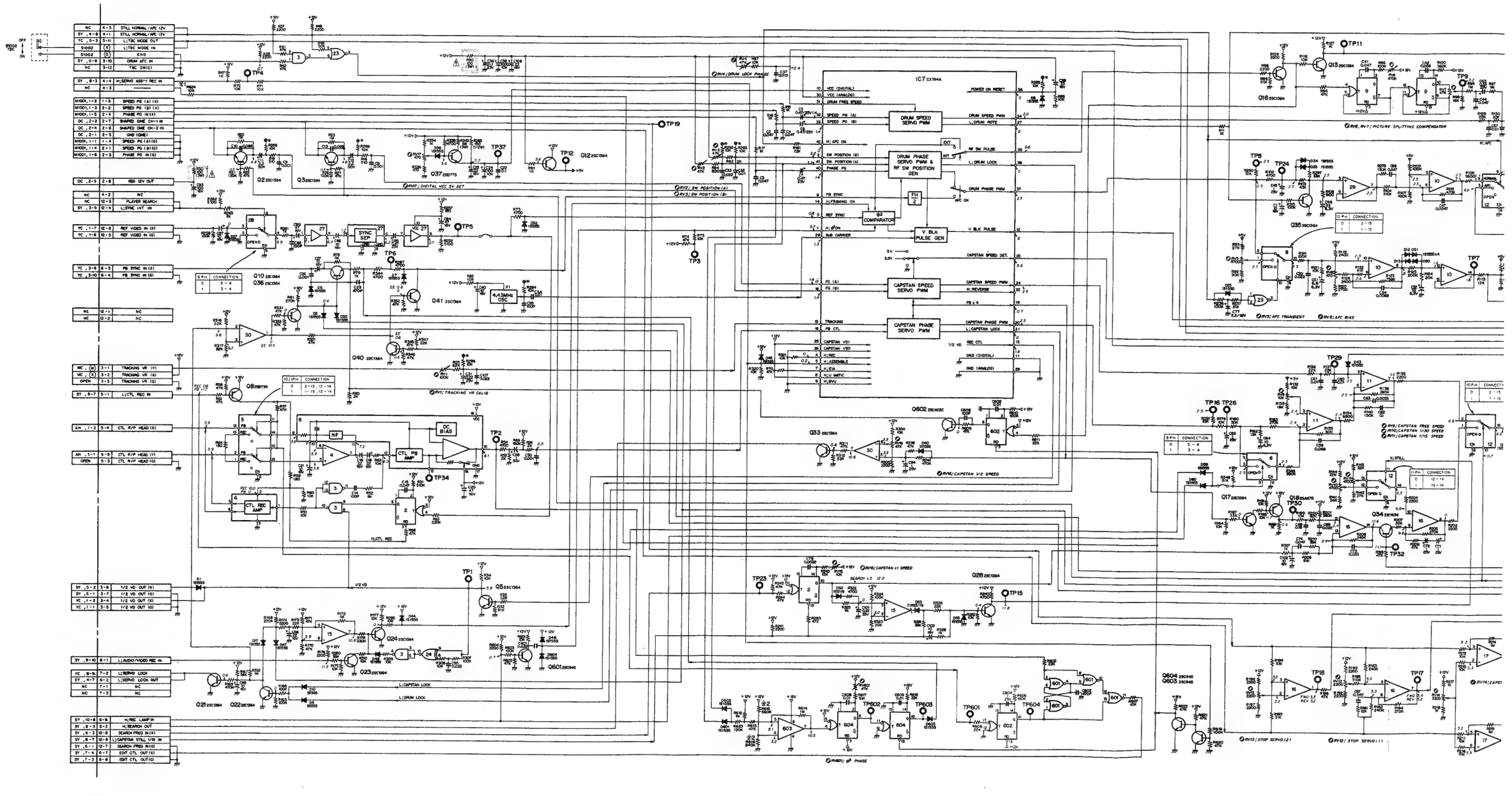
MI-3 -SOLDERING SIDE-

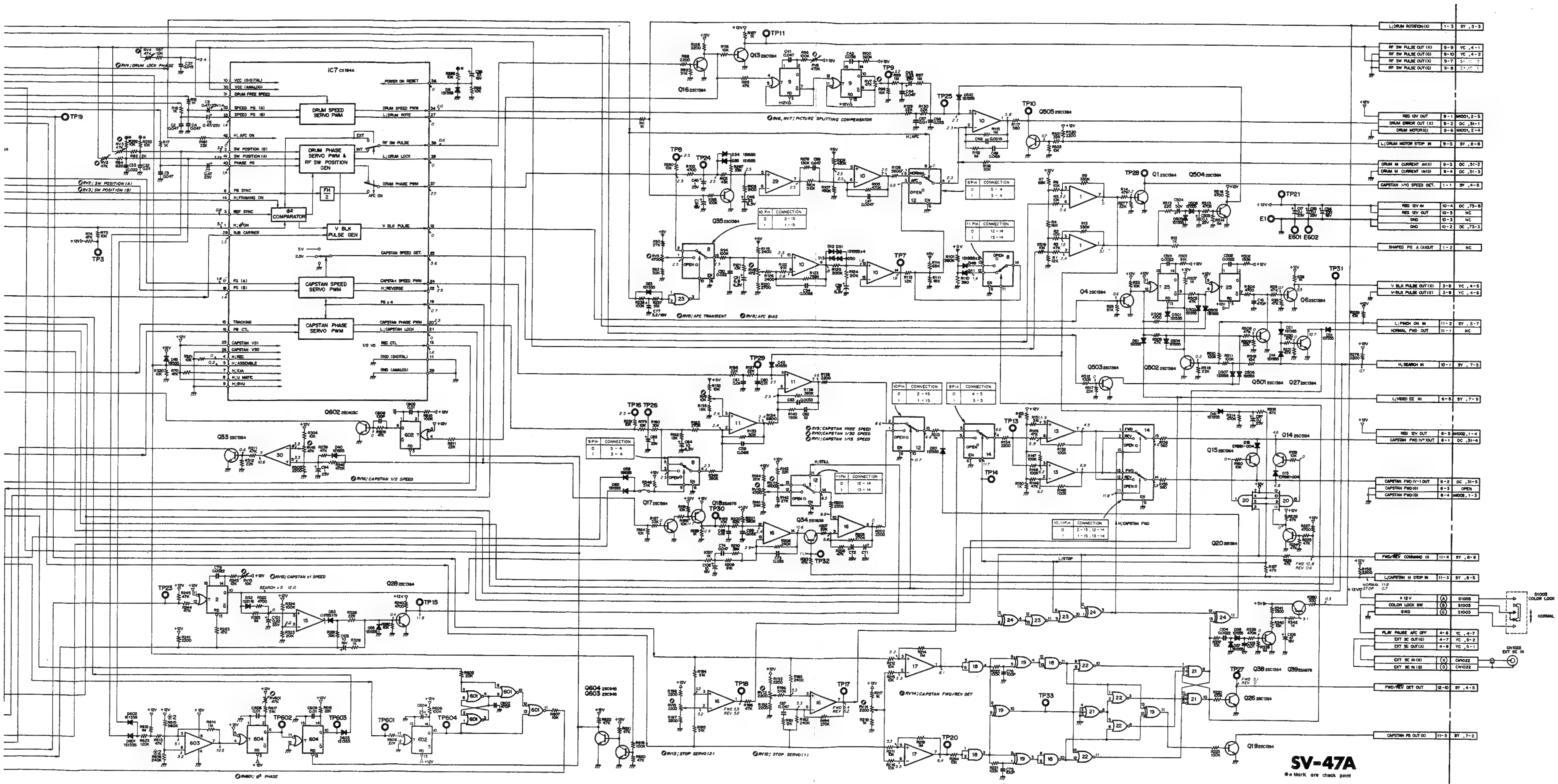




HP-3
-SOLDERING SIDE-

SV-47A
(DRUM/CAPSTAN PWM SERVO)





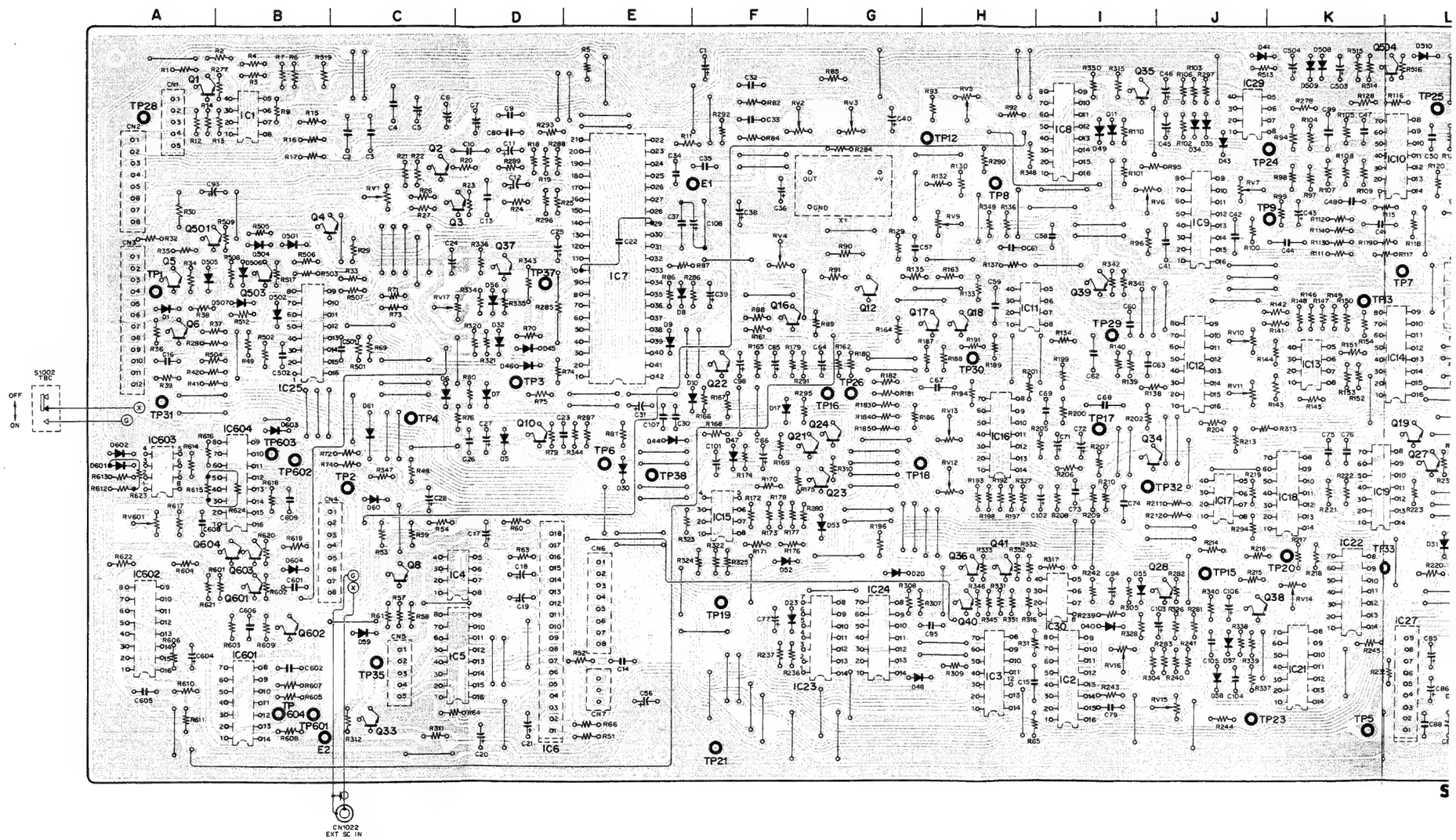
NOTE:

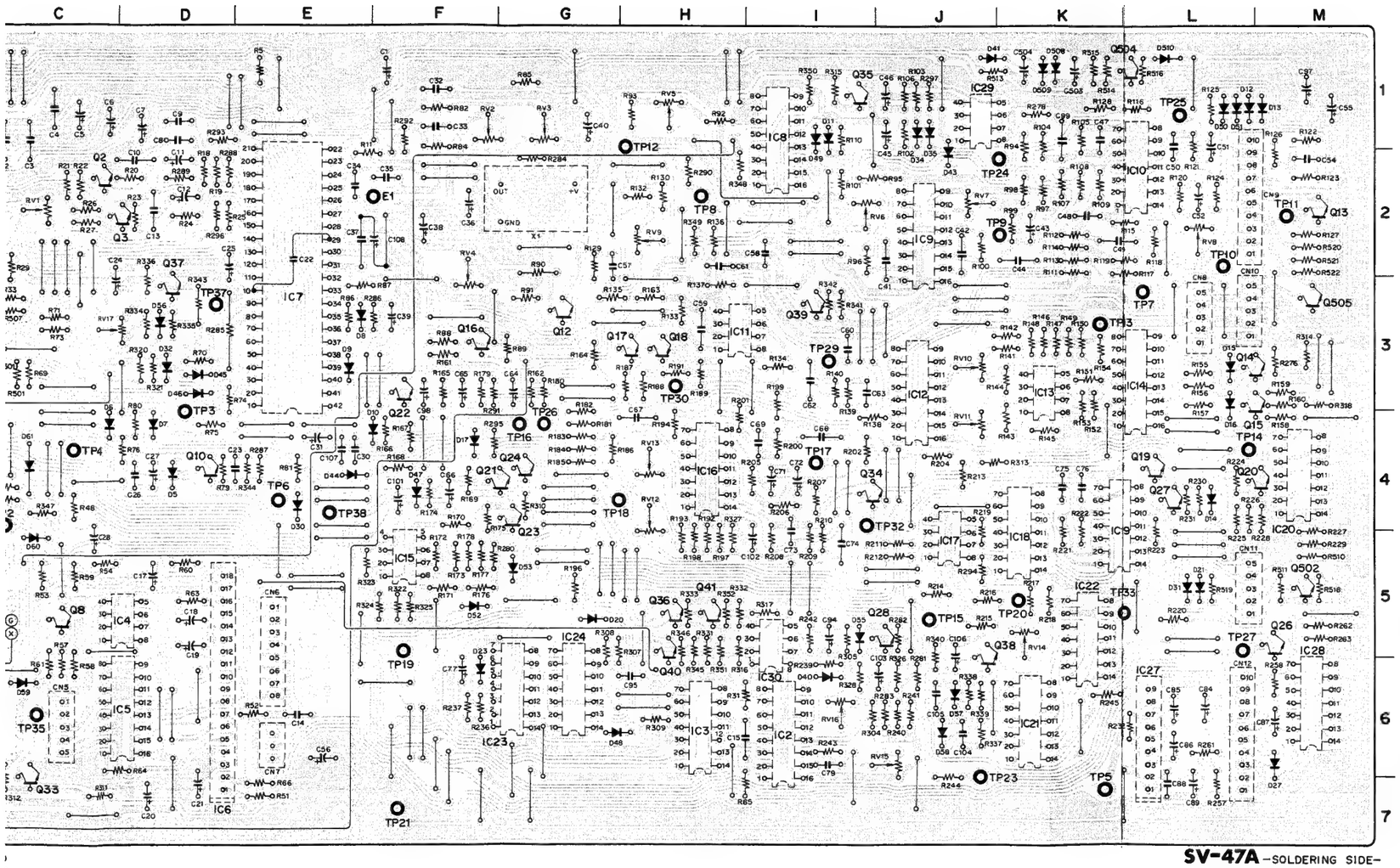
MARK	CHANGE INFORMATION	SERIAL NO.
※1	R615 56K → 47K R624 120K → 10K	AEP: 11451 ~ UK: 10651 ~
※2	R615 47K → 560K R616 20K → 240K	AEP: 12151 ~ UK: 10751 ~

NOTE: **The shaded and ⚠ -marked components are critical to safety.**
Replace only with same components as specified.

SV-47A
(DRUM/CAPSTAN PWM SERVO)

REF NO	TYPE	VDD 12V	VCC 12V	GND
IC 1	μPC358C		8	4
IC 2	HD14538BP	16		8
IC 3	TC4011BP	14		7
IC 4	NJM4558D-D		8	4
IC 5	TC40538P	16		8
IC 6	BX-3914		18	17
IC 7	CX-194A	—	—	—
IC 8	TC40528P	16		8
IC 9	MC14538BCP	16		8
IC 10	μPC324C		4	11
IC 11	μPC358C		8	4
IC 12	TC40538P	16		8
IC 13	μPC358C		8	4
IC 14	TC40538P	16		8
IC 15	μPC358C		8	4
IC 16	μPC324C		4	11
IC 17	μPC358C		8	4
IC 18	TC40938P	14		7
IC 19	TC40306P	14		7
IC 20	TC40828P	14		7
IC 21	TC40258P	14		7
IC 22	TC40018P	14		7
IC 23	TC40018P	14		7
IC 24	TC40306P	14		7
IC 25	MC14538BCP	14		7
IC 27	BX-3915	—	—	—
IC 28	TC40538P	16		8
IC 29	μPC358C		8	4
IC 30	μPC358C		8	4
IC601	TC40018P	14		7
IC602	MC14538BCP	14		7
IC603	NJM4560D		8	4
IC604	MC14538BCP	14		7





SV-47A –SOLDERING SIDE–

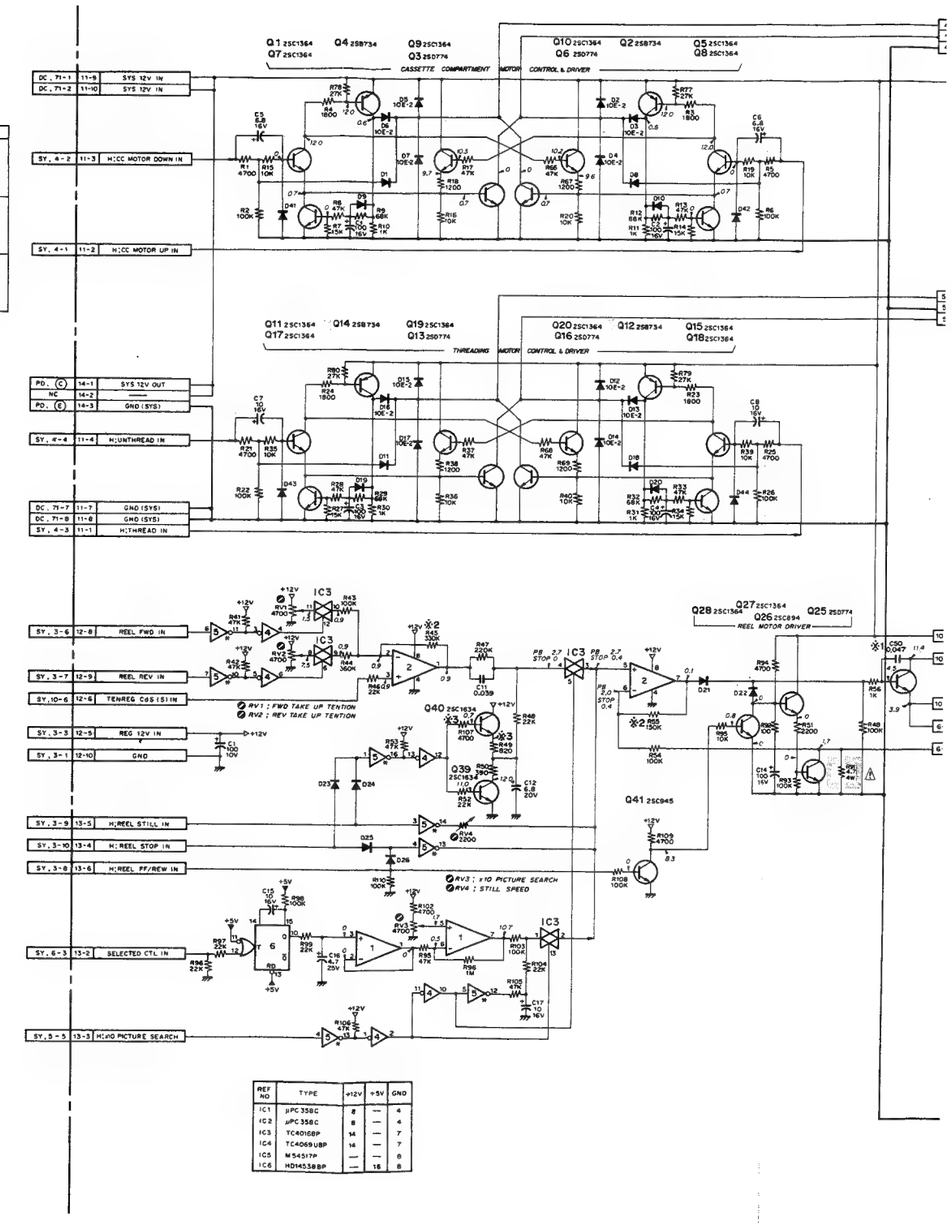
CN1	A-1	IC1	B-1	Q505	M-3
CN2	A-2	IC2	I-6	Q601	B-5
CN3	A-3	IC3	H-6	Q602	B-6
CN4	B-5	IC4	D-5	Q603	B-5
CN5	C-6	IC5	D-6	Q604	B-5
CN6	E-6	IC6	D-6		
CN8	L-3	IC7	E-3	RV1	C-2
CN9	L-2	IC8	I-1	RV2	F-1
CN10	L-3	IC9	J-2	RV3	G-1
CN11	L-5	IC10	L-2	RV4	F-3
CN12	L-6	IC11	H-3	RV5	H-1
		IC12	J-3	RV6	I-2
D1	A-3	IC13	K-3	RV7	J-2
D5	D-4	IC14	L-3	RV8	L-2
D6	C-4	IC15	F-5	RV9	H-2
D7	D-4	IC16	H-4	RV10	J-3
D8	E-3	IC17	J-5	RV11	J-4
D9	E-3	IC18	K-4	RV12	H-4
D10	F-4	IC19	K-4	RV13	H-4
D11	I-1	IC20	M-4	RV14	K-5
D12	L-1	IC21	K-6	RV15	J-6
D13	M-1	IC22	K-5	RV16	I-6
D14	L-4	IC23	G-6	RV17	C-3
D15	L-3	IC24	G-6	RV601	A-5
D16	L-3	IC25	B-3		
D17	F-4	IC27	L-6	TP1	A-3
D20	G-5	IC28	M-6	TP2	C-4
D21	L-5	IC29	J-1	TP3	D-4
D23	F-6	IC30	I-5	TP4	C-4
D27	M-6	IC601	B-6	TP5	K-7
D30	E-4	IC602	A-6	TP6	E-4
D31	L-5	IC603	A-4	TP7	L-3
D32	D-3	IC604	B-4	TP8	H-2
D34	J-1			TP9	K-2
D35	J-1	Q1	A-1	TP10	L-2
D40	I-6	Q2	C-2	TP11	M-2
D41	J-1	Q3	D-2	TP12	H-1
D43	J-2	Q4	B-2	TP13	K-3
D44	E-4	Q5	A-3	TP14	L-4
D45	D-3	Q6	A-3	TP15	J-5
D46	D-3	Q8	C-5	TP16	G-4
D47	F-4	Q10	D-4	TP17	I-4
D48	H-6	Q12	G-3	TP18	H-4
D49	I-1	Q13	M-2	TP19	F-6
D50	L-1	Q14	M-3	TP20	K-5
D51	L-1	Q15	M-4	TP21	F-7
D52	F-5	Q16	F-3	TP23	J-6
D53	G-5	Q17	H-3	TP24	K-2
D55	I-5	Q18	H-3	TP25	L-1
D56	D-3	Q19	L-4	TP26	G-4
D57	J-6	Q20	M-4	TP27	L-5
D58	J-6	Q21	G-4	TP28	A-1
D59	C-6	Q22	F-3	TP29	I-3
D60	C-5	Q23	G-4	TP30	H-3
D61	C-4	Q24	G-4	TP31	A-4
D501	B-2	Q26	M-5	TP32	I-4
D502	B-3	Q27	L-4	TP33	K-5
D504	B-2	Q28	J-5	TP35	C-6
D505	A-3	Q33	C-7	TP37	D-3
D506	B-3	Q34	J-4	TP38	E-4
D507	B-3	Q35	I-1	TP601	B-6
D508	K-1	Q36	H-5	TP602	B-4
D509	K-1	Q37	D-3	TP603	B-4
D510	L-1	Q38	J-6	TP604	B-6
D601	A-4	Q39	I-3		
D602	A-4	Q40	H-6	X1	G-2
D603	B-4	Q41	H-5		
D604	B-5	Q501	A-2		
		Q502	M-5		
E1	F-2	Q503	B-3		
E2	B-7	Q504	L-1		

MR-6 (THREADING/CC MOTOR DRIVER)
FR-11 (THREADING RING DET.)
PH-5
PT-9

S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)

NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C50 0.047 ADDED	USA: 10941 ~ CND: 20061 ~ J: 10151 ~ AEP: 10251 ~ UK: 10051 ~
※2	R45 100K → 330K R55 470K → 150K	USA: 11541 ~ CND: 20111 ~ J: 10401 ~ AEP: 11151 ~ UK: 10351 ~
※3	R49 1K → 820 R107 22K → 4700	USA: 12691 ~ CND: 20261 ~ J: 10601 ~ AEP: 11151 ~ UK: 10551 ~



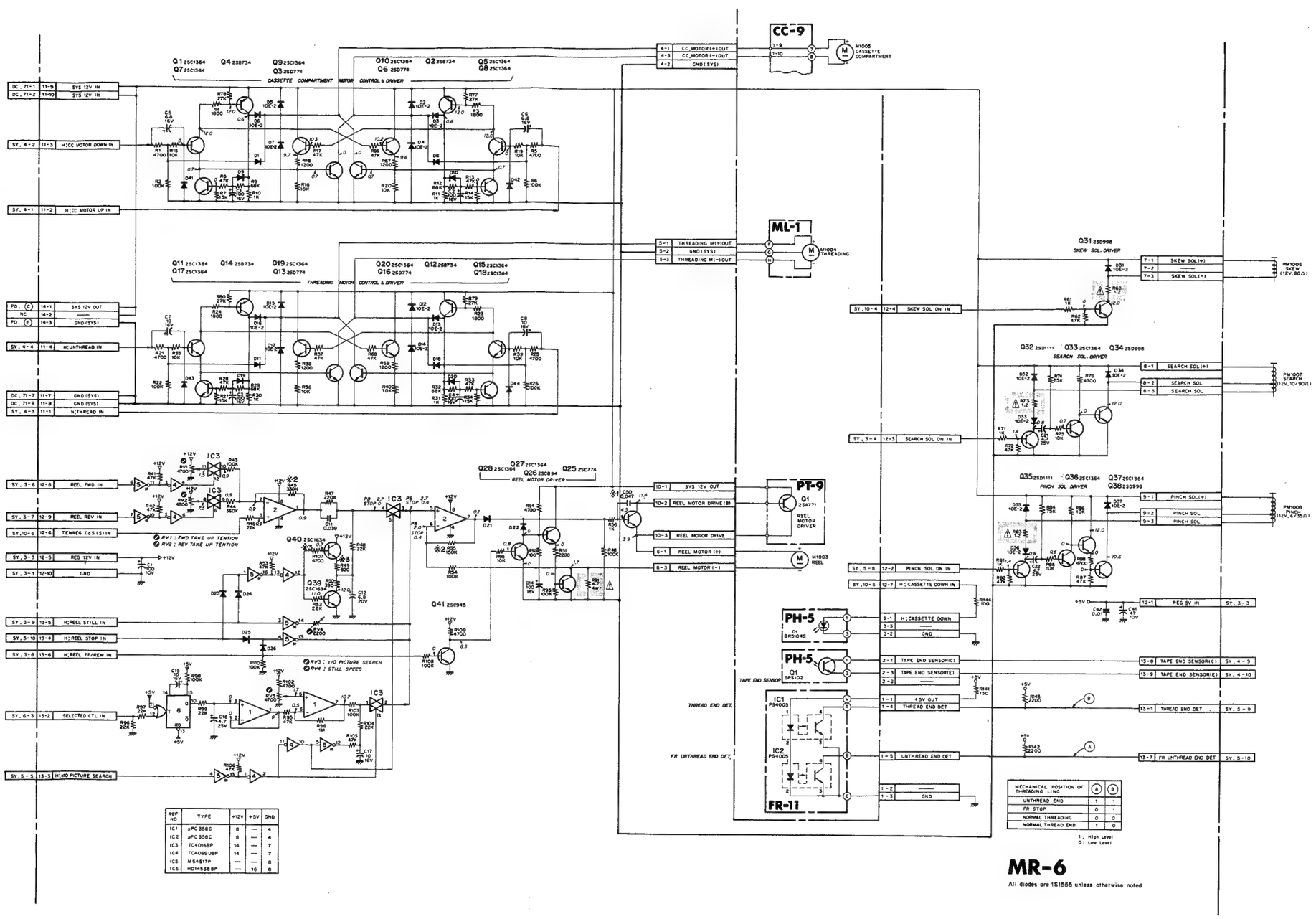
REF NO	TYPE	+12V	+5V	GND
IC1	μPC 358C	8	—	4
IC2	μPC 358C	8	—	4
IC3	TC4016BP	14	—	7
IC4	TC4069UBP	14	—	7
IC5	M 54577P	—	—	8
IC6	HD14538BP	—	16	8

MR-6 (THREADING/CC MOTOR DRIVER)
FR-11 (THREADING RING DET.)
PH-5
PT-9

S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)

NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C50 0.047 ADDED	USA: 10941 ~ CND: 20061 ~ J: 10151 ~ AEP: 10251 ~ UK: 10051 ~
※2	R45 100K → 330K R55 470K → 150K	USA: 11541 ~ CND: 20111 ~ J: 10401 ~ AEP: 11151 ~ UK: 10351 ~
※3	R49 1K → 820 R107 22K → 4700	USA: 12691 ~ CND: 20261 ~ J: 10801 ~ AEP: 11151 ~ UK: 10551 ~



REF NO	TYPE	+12V	+5V	GND
IC1	μPC 358C	8	—	4
IC2	μPC 358C	8	—	4
IC3	TC4016BP	14	—	7
IC4	TC4069UBP	14	—	7
IC5	M54517P	—	—	8
IC6	HD14538BP	—	16	8

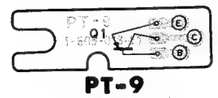
NOTE: **The shaded and ⚠ -marked components are critical to safety.**
Replace only with same components as specified.

13-55 (a)

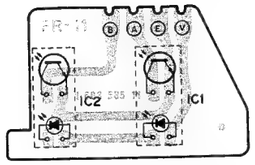
13-56 (a)

MR-6 (THREADING/CC MOTOR DRIVER)
FR-11 (THREADING RING DET.)
PH-5
PT-9

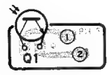
S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)



PT-9
-SOLDERING SIDE-



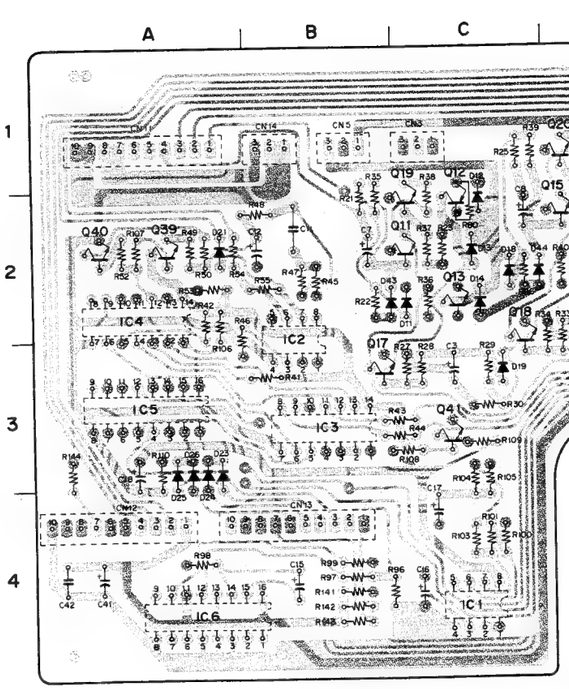
FR-11 -SOLDERING SIDE-



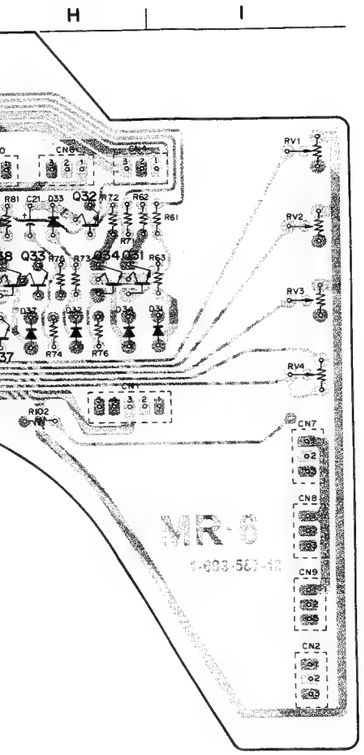
PH-5
-SOLDERING SIDE-

PH-5
-SOLDERING SIDE-

CN1	H-3	IC1	C-4
CN2	I-4	IC2	B-2
CN3	C-1	IC3	B-3
CN4	H-1	IC4	A-2
CN5	B-1	IC5	A-3
CN6	H-1		
CN7	I-3	Q1	F-2
CN8	I-4	Q2	F-1
CN9	I-4	Q3	F-2
CN10	H-1	Q4	E-1
CN11	A-1	Q5	E-2
CN12	A-4	Q6	E-2
CN13	B-4	Q7	E-2
CN14	B-1	Q8	D-2
		Q9	F-1
D1	E-2	Q10	E-1
D2	F-1	Q11	C-2
D3	F-2	Q12	C-2
D4	F-2	Q13	C-2
D5	E-1	Q14	D-1
D6	E-2	Q15	D-2
D7	E-2	Q16	D-2
D8	D-2	Q17	B-3
D9	F-2	Q18	C-2
D10	E-2	Q19	C-2
D11	C-2	Q20	D-1
D12	C-2	Q25	G-1
D13	C-2	Q26	G-2
D14	C-2	Q27	G-1
D15	D-1	Q28	G-2
D16	D-2	Q31	H-2
D17	D-2	Q32	H-2
D18	C-2	Q33	H-2
D19	C-3	Q34	H-2
D20	D-2	Q35	G-2
D21	A-2	Q36	G-2
D22	G-2	Q37	H-2
D23	A-3	Q38	H-2
D24	A-3	Q39	A-2
D25	A-3	Q40	A-2
D26	A-3	Q41	C-3
D31	I-2		
D32	H-2	RV1	I-1
D33	H-2	RV2	I-2
D34	H-2	RV3	I-2
D35	G-2	RV4	I-3
D36	G-2		
D37	H-2		
D41	E-2		
D42	D-2		
D43	B-2		
D44	C-2		



MR-6 -SOLDERING SIDE-

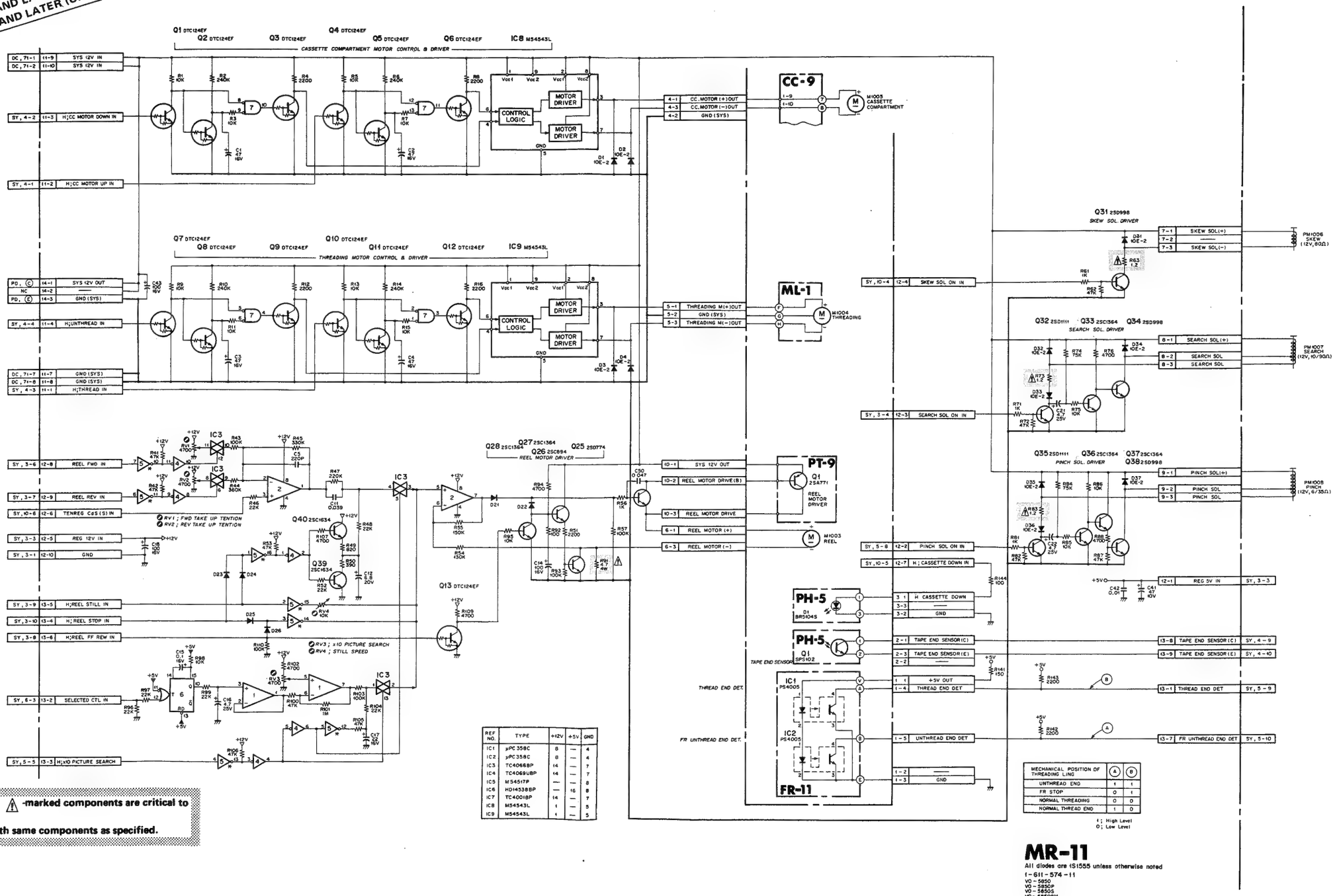


13-57 (a)

13-58 (a)

MR-11 (THREADING/CC MOTOR DRIVER)
FR-11 (THREADING RING DET.)
PH-5
PT-9

S/N 14251 AND LATER (AEP)
S/N 11301 AND LATER (UK)



REF NO.	TYPE	+12V	+5V	GND
IC1	μPC358C	8	—	4
IC2	μPC358C	8	—	4
IC3	TC4066BP	14	—	7
IC4	TC4069UBP	14	—	7
IC5	M54517P	—	—	8
IC6	HD14538BP	—	16	8
IC7	TC4001BP	14	—	7
IC8	M54543L	1	—	5
IC9	M54543L	1	—	5

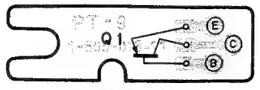
NOTE: **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

MR-11
All diodes are 1S1555 unless otherwise noted
1-611-574-11
VO-5850
VO-5850P
VO-5850S
VO-5850PM
VO-5800
VO-5800PS

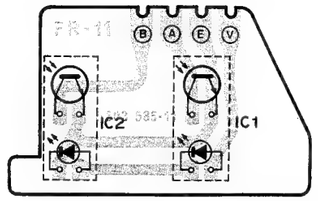
ADDED '84. 3

MR-11 (THREADING/CC MOTOR DRIVER)
FR-11 (THREADING RING DET.)
PH-5
PT-9

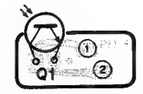
S/N 14251 AND LATER (AEP)
S/N 11301 AND LATER (UK)



PT-9 -SOLDERING SIDE-



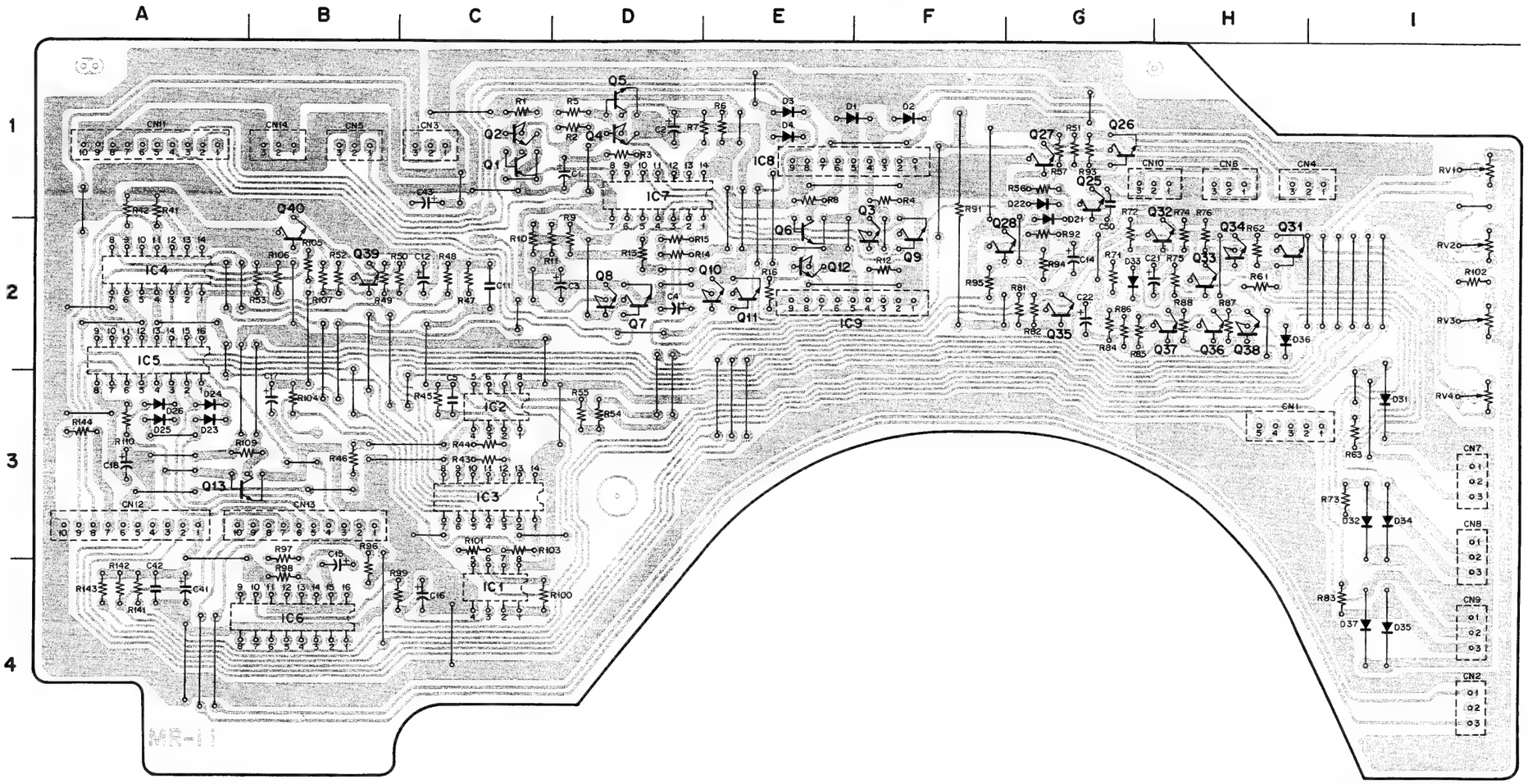
FR-11 -SOLDERING SIDE-



PH-5 -SOLDERING SIDE-

PH-5 -SOLDERING SIDE-

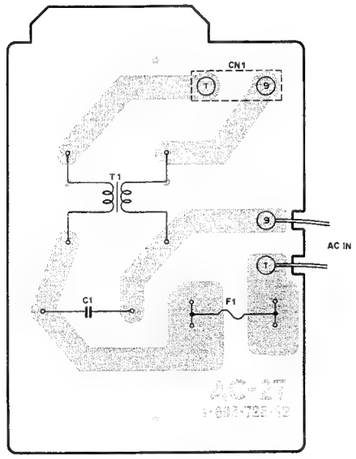
CN1	H-3	Q1	C-1		
CN2	I-4	Q2	C-1		
CN3	C-1	Q3	F-2		
CN4	H-1	Q4	D-1		
CN5	B-1	Q5	D-1		
CN6	H-1	Q6	E-2		
CN7	I-3	Q7	D-2		
CN8	I-3	Q8	D-2		
CN9	I-4	Q9	F-2		
CN10	H-1	Q10	E-2		
CN11	A-1	Q11	E-2		
CN12	A-3	Q12	E-2		
CN13	B-3	Q13	B-3		
CN14	B-1	Q25	G-1		
		Q26	G-1		
D1	E-1	Q27	G-1		
D2	F-1	Q28	F-2		
D3	E-1	Q31	H-2		
D4	E-1	Q32	H-2		
D21	G-2	Q33	H-2		
D22	G-1	Q34	H-2		
D23	A-3	Q35	G-2		
D24	A-3	Q36	H-2		
D25	A-3	Q37	H-2		
D26	A-3	Q38	H-2		
D31	I-3	Q39	B-2		
D32	I-3	Q40	B-2		
D33	G-2				
D34	I-3	RV1	I-1		
D35	I-4	RV2	I-2		
D36	H-2	RV3	I-2		
D37	I-4	RV4	I-3		
IC1	C-4				
IC2	C-3				
IC3	C-3				
IC4	A-2				
IC5	A-2				
IC6	B-4				
IC7	D-1				
IC8	E-1				
IC9	E-2				



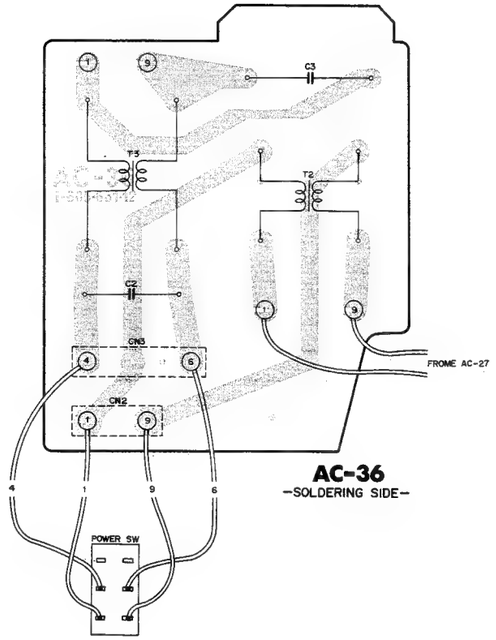
MR-11 -SOLDERING SIDE-
1-611-574-11
VO-5850
VO-5850P
VO-5850S
VO-5850PM
VO-5800
VO-5800PS

AC-27
AC-36
(AC INPUT)

S/N UP TO 13350 (AEP)
S/N UP TO 10850 (UK)



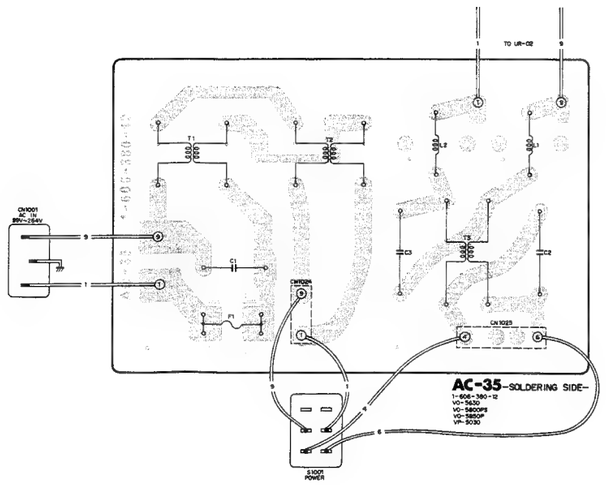
AC-27
–SOLDERING SIDE–



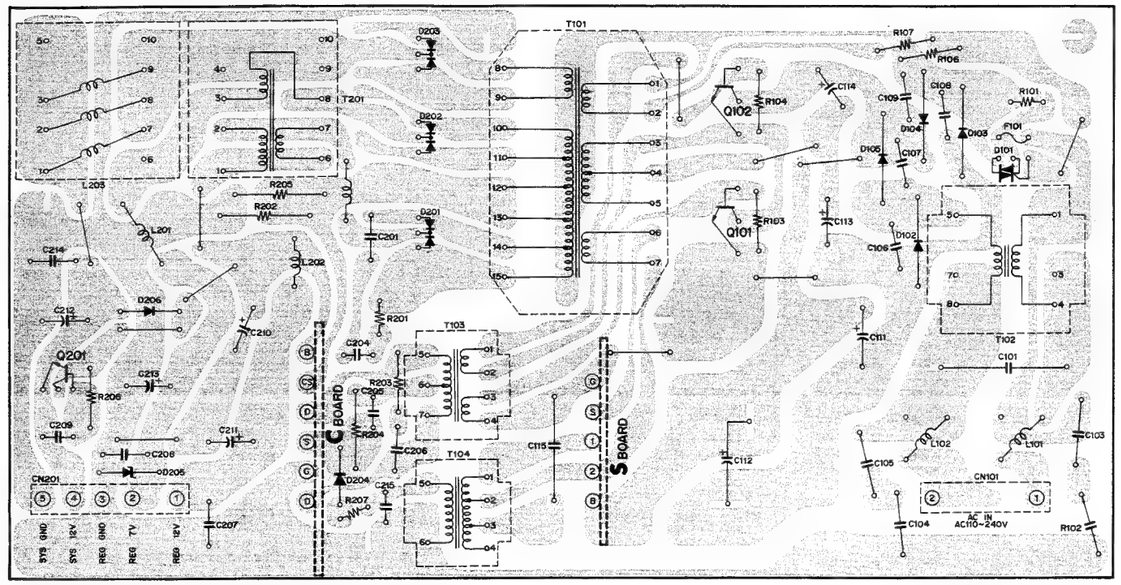
AC-36
–SOLDERING SIDE–

AC-35
(AC INPUT)

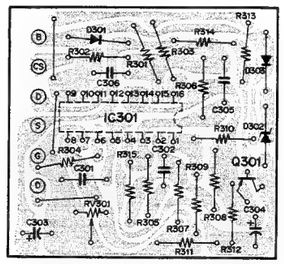
S/N 13351 AND LATER (AEP)
S/N 10851 AND LATER (UK)



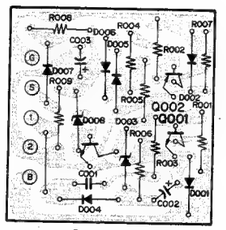
UR-02 (SWITCHING REGULATOR)



M –SOLDERING SIDE–

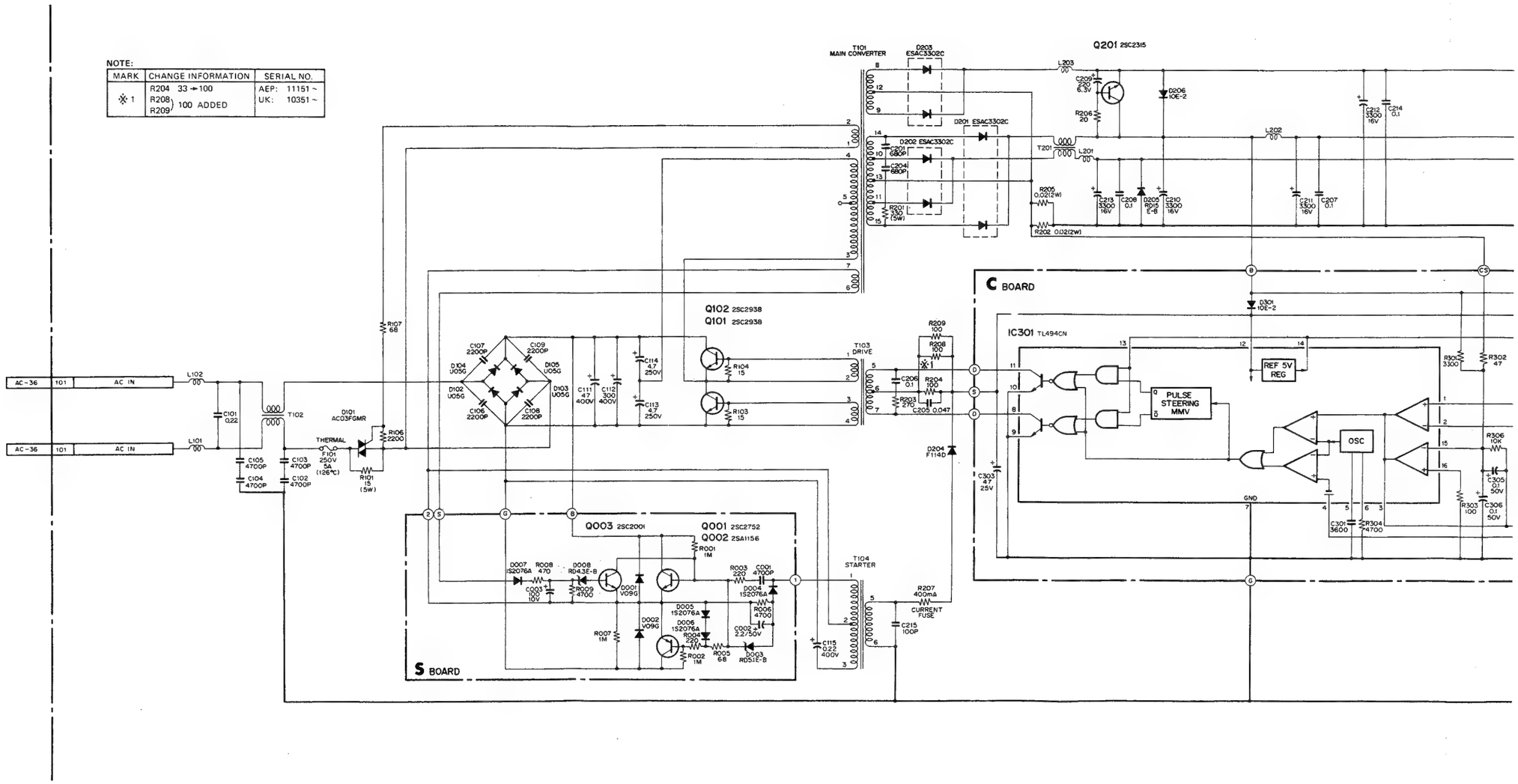


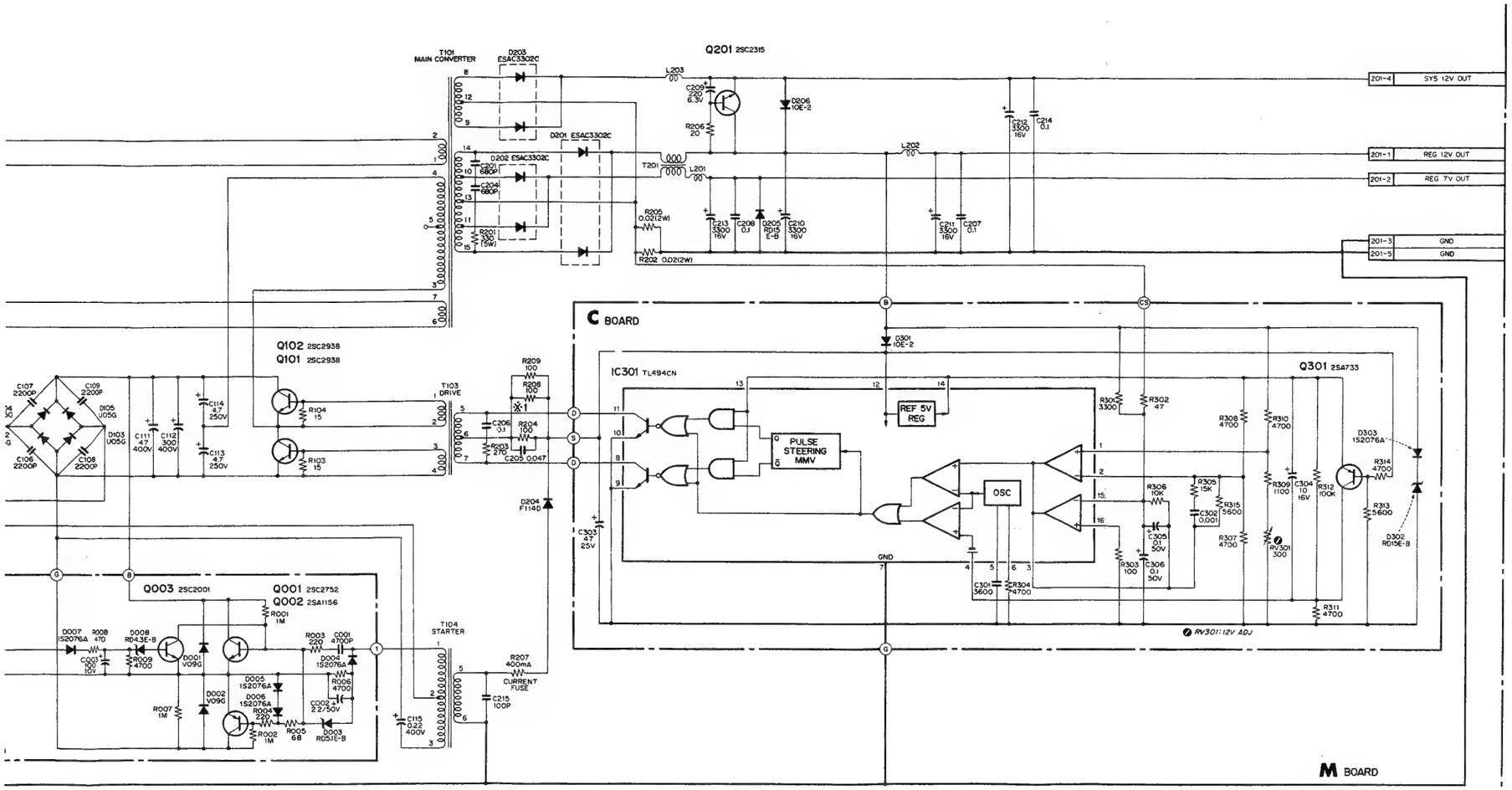
C –SOLDERING SIDE–



S –SOLDERING SIDE–

UR-02 (SWITCHING REGULATOR)

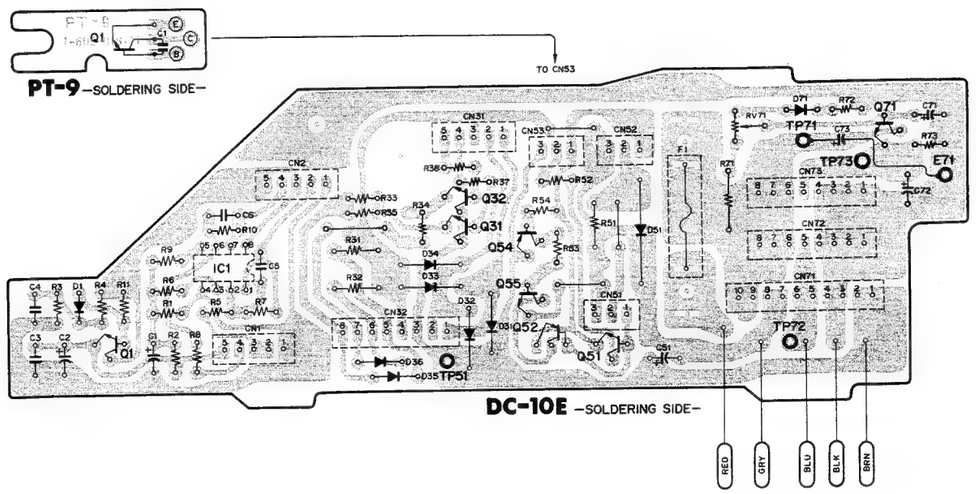




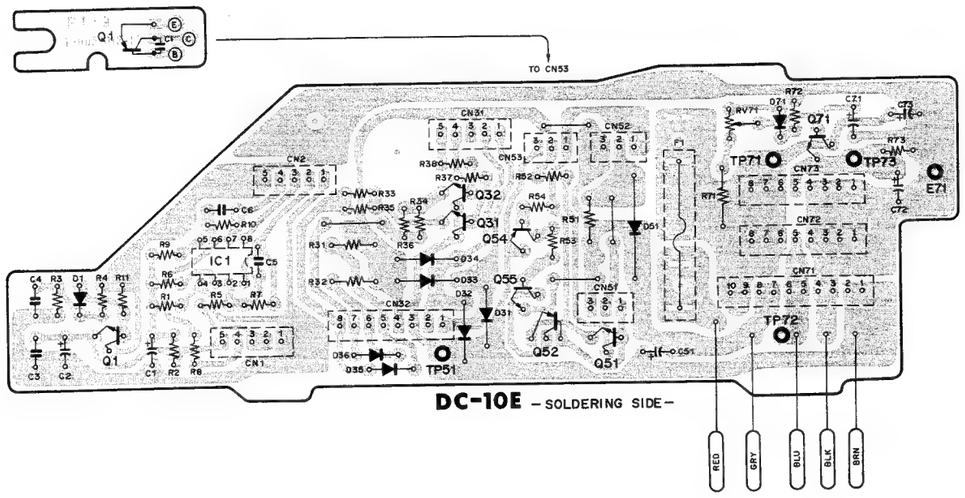
NOTE: **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

DC-10E (POWER SUPPLY)
PT-9

S/N UP TO 11150 (AEP)
S/N UP TO 10550 (UK)

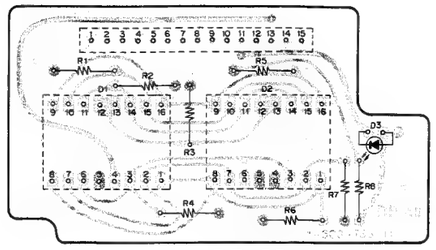


S/N 11151 AND LATER (AEP)
S/N 10551 AND LATER (UK)

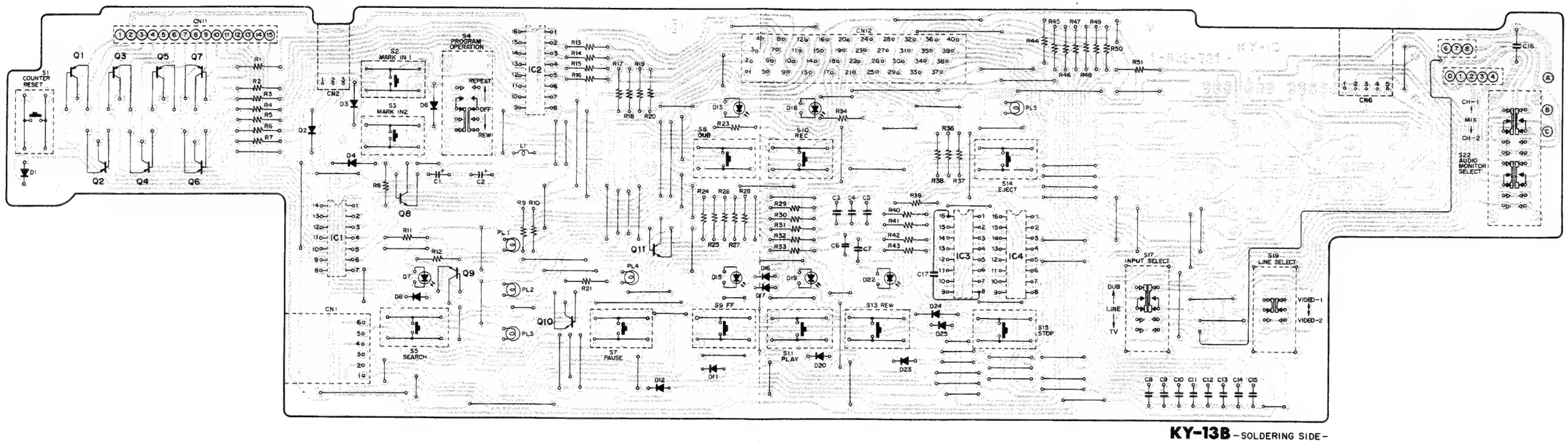


KY-13B (FUNCTION KEY)
DP-10 (DISPLAY)

S/N UP TO 13950 (AEP)
S/N UP TO 11050 (UK)



DP-10 –SOLDERING SIDE–



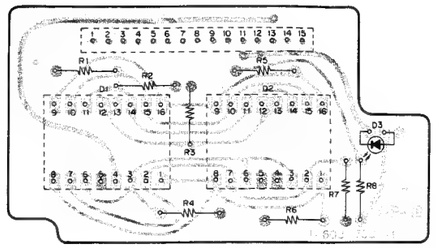
KY-13B –SOLDERING SIDE–

13-69 (a)

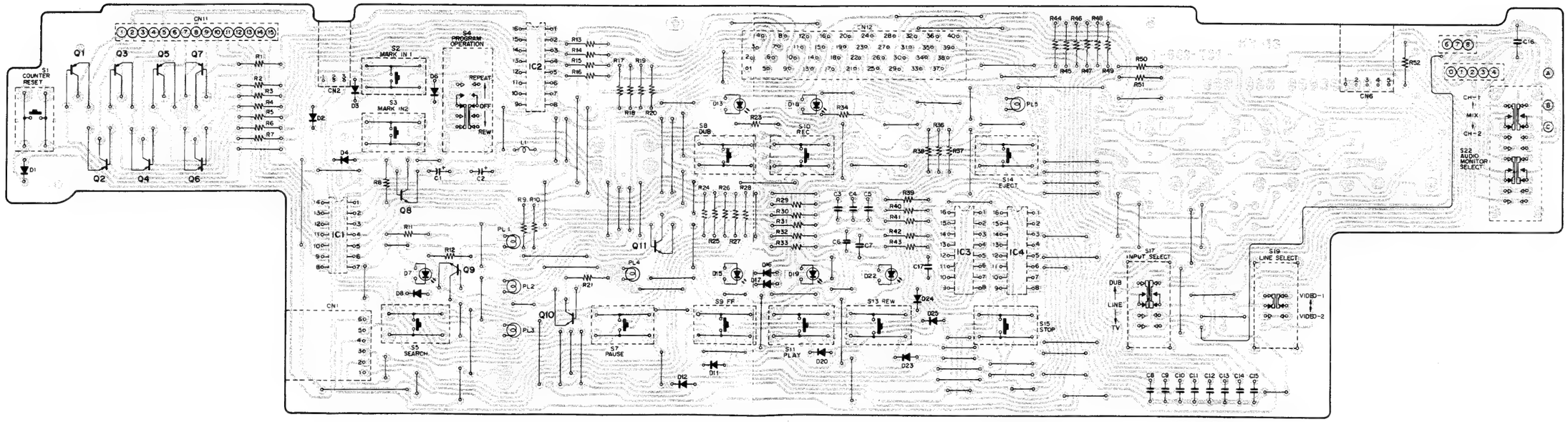
13-70 (a)

KY-13B (FUNCTION KEY)
DP-10 (DISPLAY)

S/N 13951 AND LATER (AEP)
S/N 11051 AND LATER (UK)

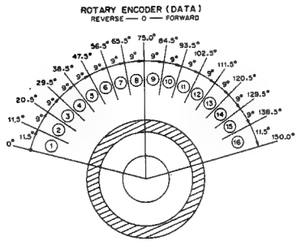


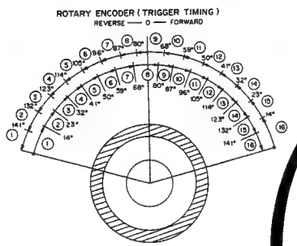
DP-10 – SOLDERING SIDE –



KY-13B – SOLDERING SIDE –
1-603-731-34
VO-5800
VO-5800PS

KY-13B (FUNCTION KEY)
DP-10 (DISPLAY)





DATA

CODE NO	SEARCH DIAL A	B	C	D	MODE
(1)	0	0	0	1	REV x 5
(2)	1	0	0	1	REV x 2
(3)	1	1	0	1	REV x 1
(4)	0	1	0	1	REV x 1/2
(5)	0	1	1	1	REV x 1/5
(6)	1	1	1	1	REV x 1/10
(7)	1	0	1	1	REV x 1/30
(8)	0	0	1	1	STILL
(9)	0	0	1	0	STILL
(10)	1	0	1	0	FWD x 1/30
(11)	1	1	1	0	FWD x 1/10
(12)	0	1	1	0	FWD x 1/5
(13)	0	1	0	0	FWD x 1/2
(14)	1	1	0	0	FWD x 1
(15)	1	0	0	0	FWD x 2
(16)	0	0	0	0	FWD x 5

1 ; HIGH LEVEL
0 ; LOW LEVEL

TRIGGER TIMING

CODE NO	IC3 Q1	Q2	Q3	Q4	MODE
(1)	0	0	0	1	REV x 5
(2)	1	0	0	1	REV x 2
(3)	1	1	0	1	REV x 1
(4)	0	1	0	1	REV x 1/2
(5)	0	1	1	1	REV x 1/5
(6)	1	1	1	1	REV x 1/10
(7)	1	0	1	1	REV x 1/30
(8)	0	0	1	1	STILL
(9)	0	0	1	0	STILL
(10)	1	0	1	0	FWD x 1/30
(11)	1	1	1	0	FWD x 1/10
(12)	0	1	1	0	FWD x 1/5
(13)	0	1	0	0	FWD x 1/2
(14)	1	1	0	0	FWD x 1
(15)	1	0	0	0	FWD x 2
(16)	0	0	0	0	FWD x 5

1 ; HIGH LEVEL
0 ; LOW LEVEL

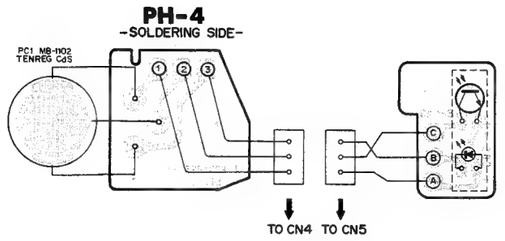
REF	TYPE	VDD 5V	GND
IC 1	M54516P	—	—
IC 2	TC4543BP	16	8
IC 3	TC4042BP	16	8
IC 4	MC14503BCP	16	8

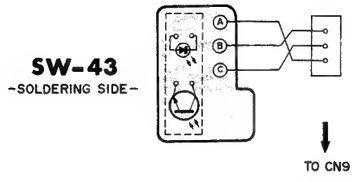
DP-10

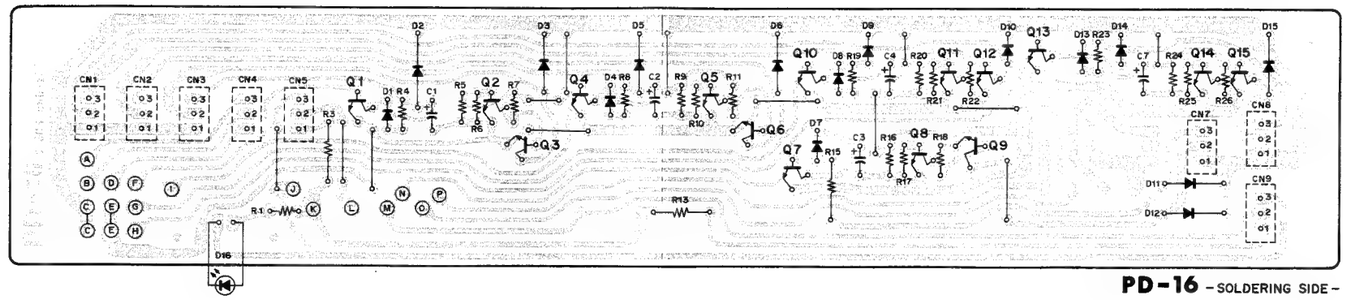
KY-13B

PD-16 (IDLER/BRAKE SOL. DRIVER)
PH-4 (TAPE TENSION DET.)
SW-43 (REEL ROTATION DET.)

S/N UP TO 15000 (AEP)
S/N UP TO 11400 (UK)



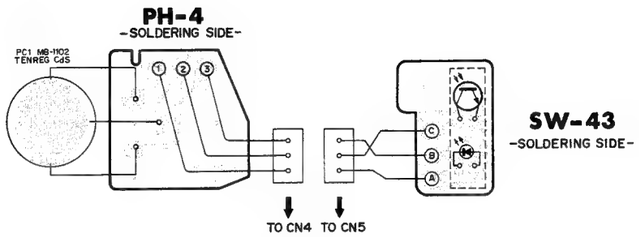


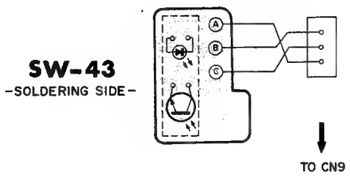


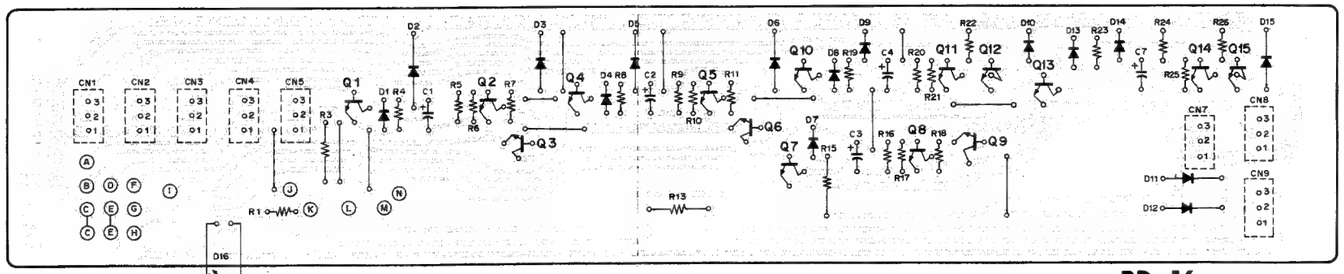
PD-16 – SOLDERING SIDE –

PD-16 (IDLER/BRAKE SOL. DRIVER)
PH-4 (TAPE TENSION DET.)
SW-43 (REEL ROTATION DET.)

S/N 15001 AND LATER (AEP)
S/N 11401 AND LATER (UK)



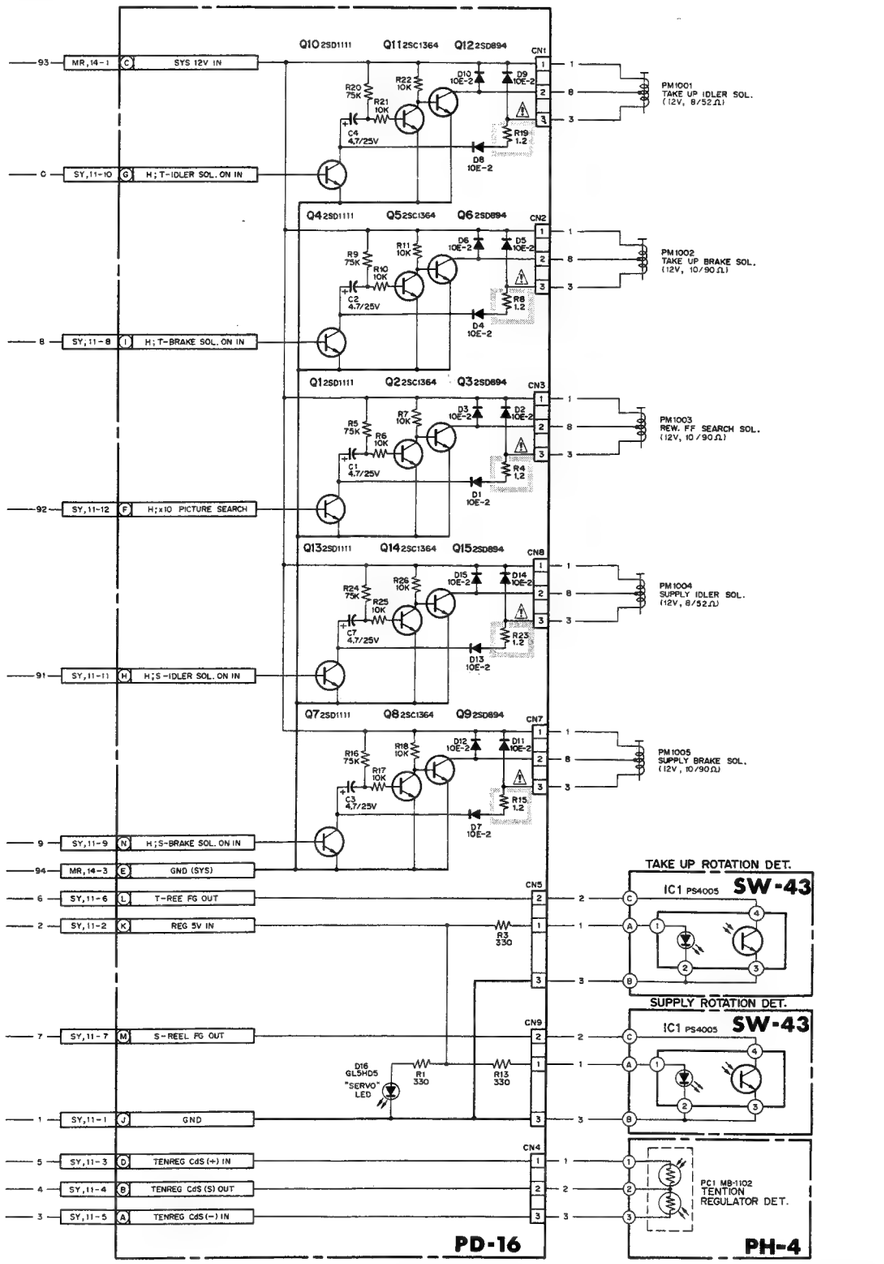




PD-16 – SOLDERING SIDE –
1 - 603 - 586 - 12
VO-5850
VO-5850P
VO-5850S
VO-5850PM
VO-5800
VO-5800PS

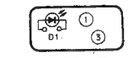
CC-9
CC-10
CC-11

PD-16 (IDLER/BRAKE SOL. DRIVER)
PH-4 (TAPE TENSION DET.)
SW-43 (REEL ROTATION DET.)

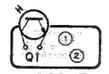


NOTE: **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

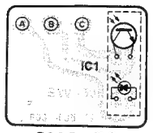
LM-7 (THREADING MOTOR)
ML-1
SW-46
SW-50
PH-5



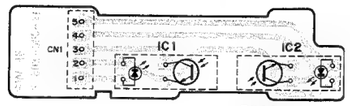
PH-5
–SOLDERING SIDE–



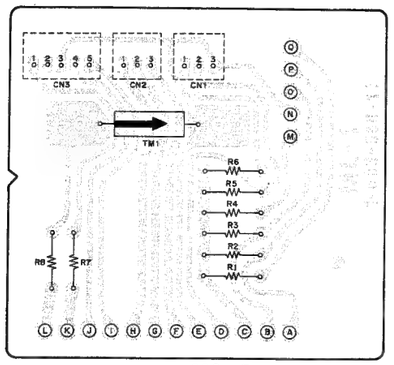
PH-5
–SOLDERING SIDE–



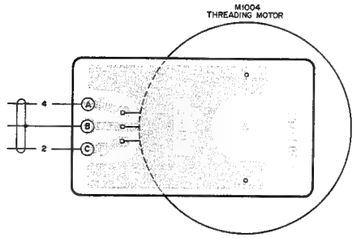
SW-50
–SOLDERING SIDE–



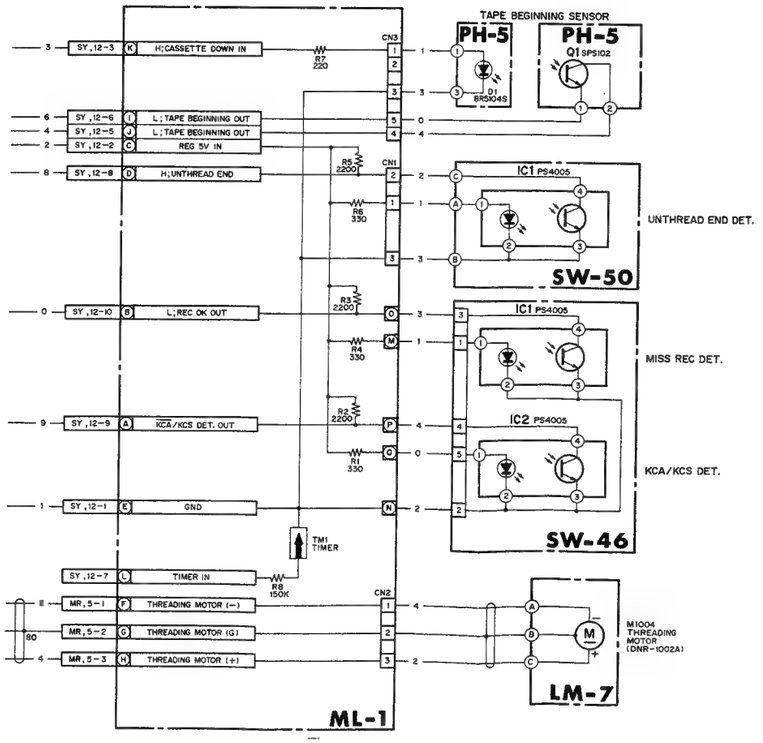
SW-46
–SOLDERING SIDE–



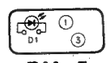
ML-1 –SOLDERING SIDE–



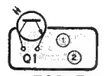
LM-7 – SOLDERING SIDE –



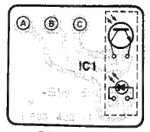
LM-7 (THREADING MOTOR)
ML-1
SW-46
SW-50
PH-5



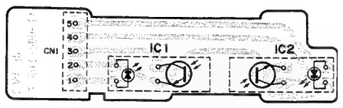
PH-5
–SOLDERING SIDE–



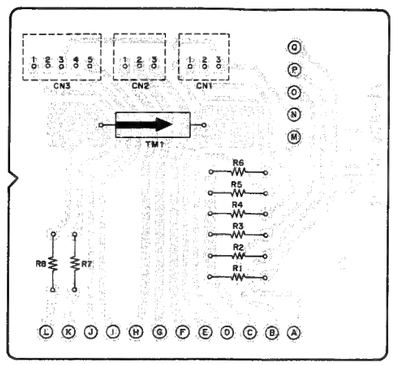
PH-5
–SOLDERING SIDE–



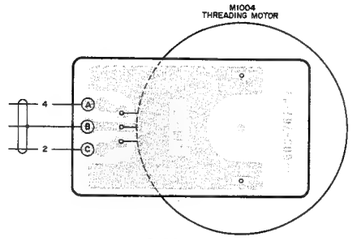
SW-50
– SOLDERING SIDE –



SW-46
–SOLDERING SIDE–

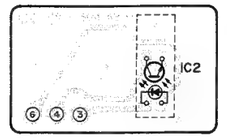


ML-1 – SOLDERING SIDE –

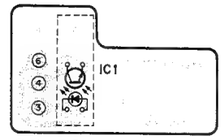


LM-7 – SOLDERING SIDE –

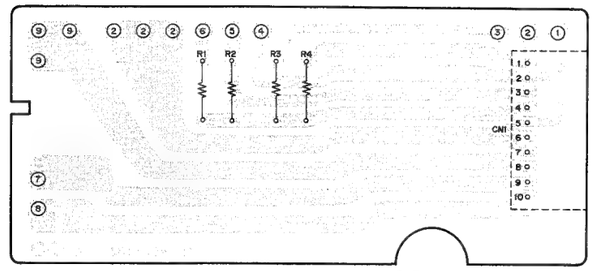
CC-9
CC-10
CC-11
) CASSETTE COMPARTMENT



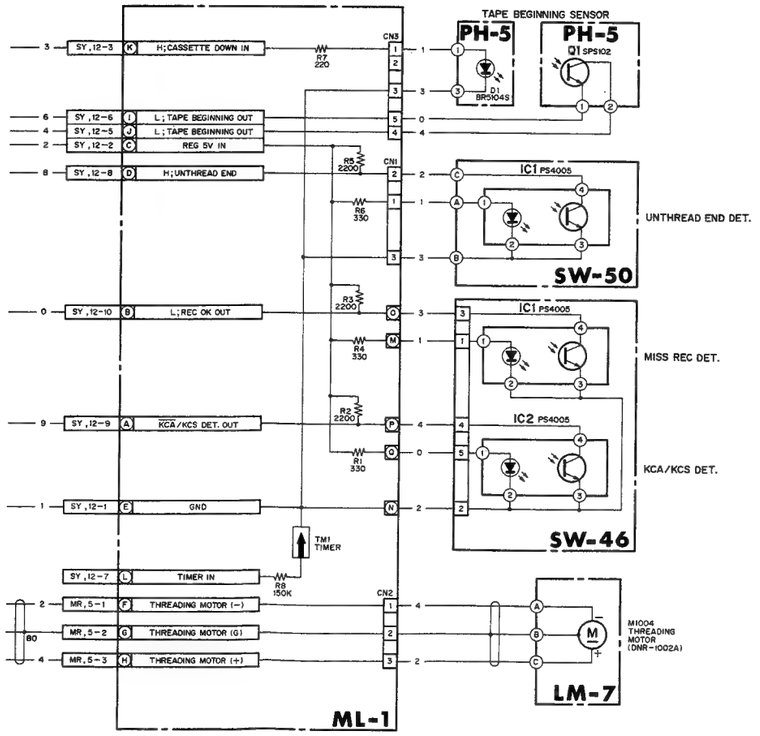
CC-11 – SOLDERING SIDE –

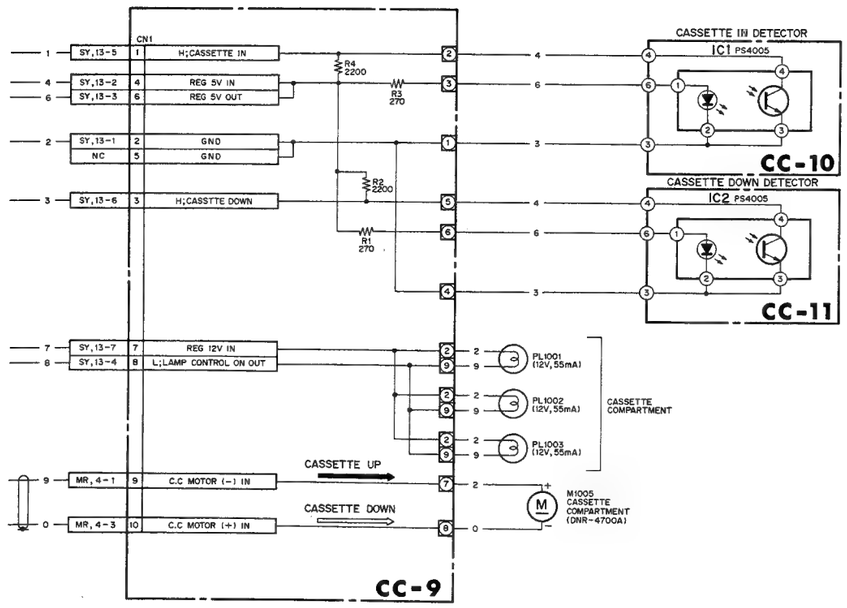


CC-10 – SOLDERING SIDE –



CC-9 – SOLDERING SIDE –

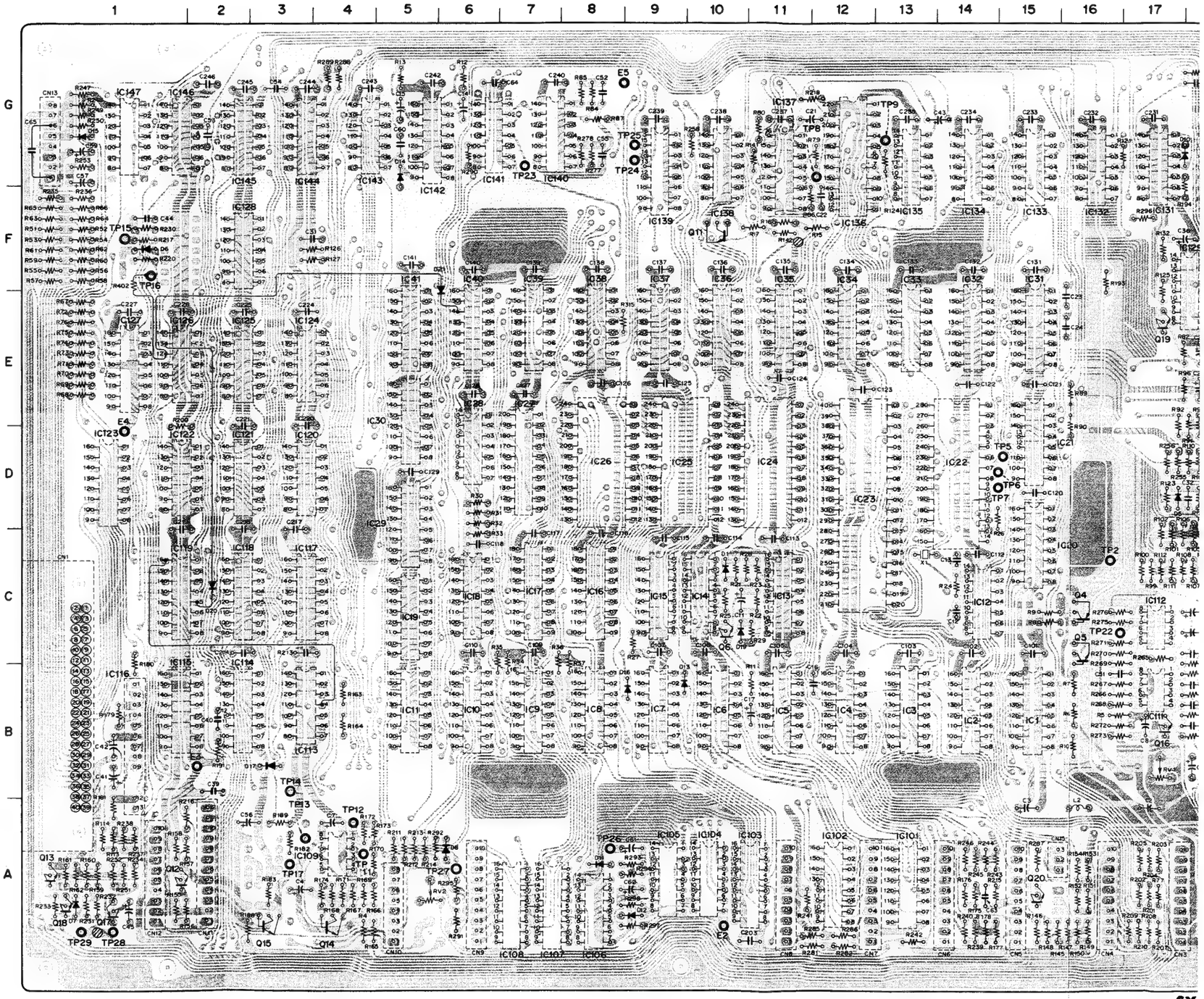




SY-68C (SYSTEM CONTROL)
BU-1
PT-9

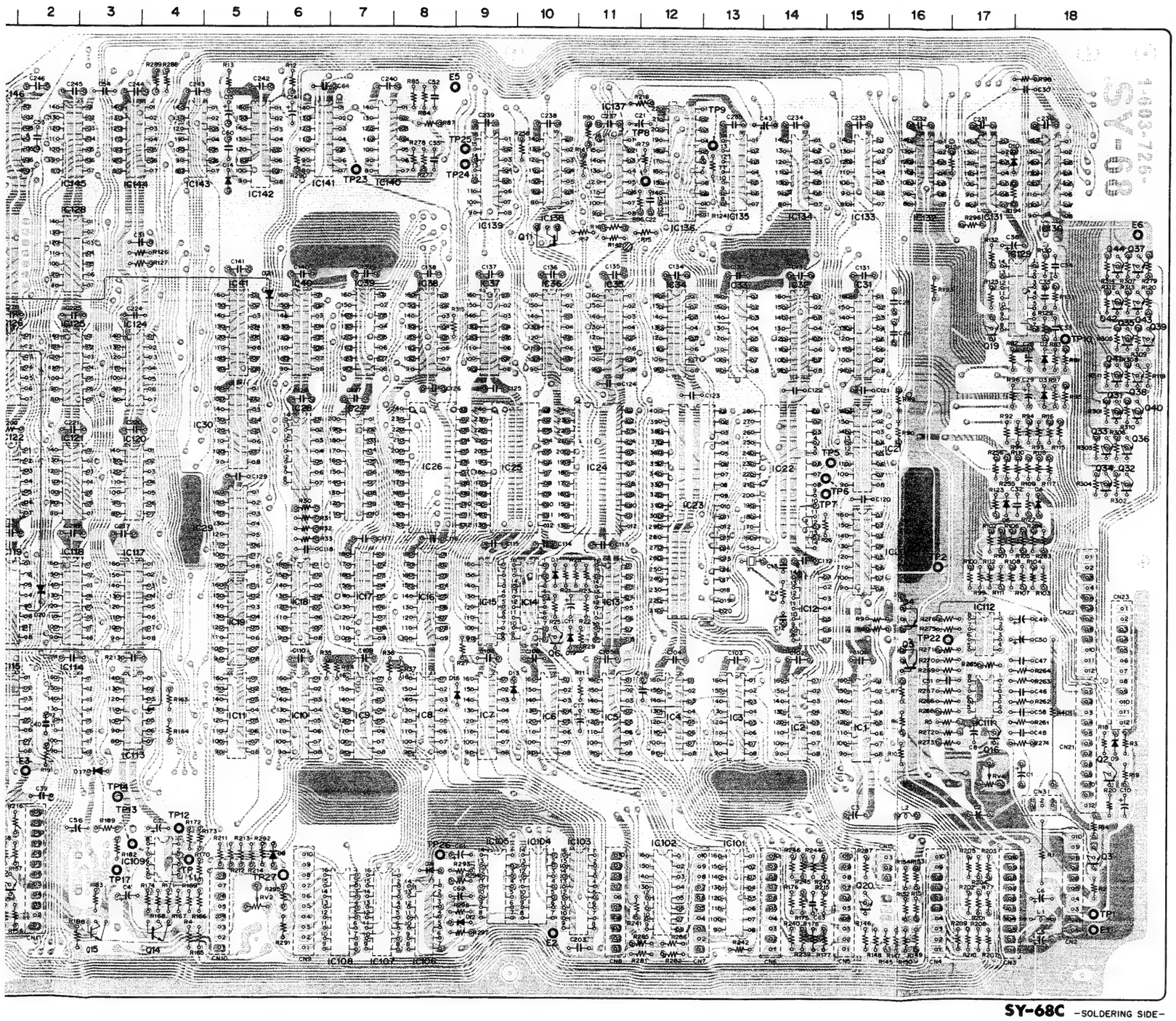
S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)

REF NO	TYPE	12V (L1)	5V (TP21)	5V (L2)	GND
IC 1	TC40175BP			16	8
IC 2	TC40175BP			16	8
IC 3	HD14503BP			16	8
IC 4	HD14503BP			16	8
IC 5	TC40175BP			16	8
IC 6	TC40175BP			16	8
IC 7	TC40175BP			16	8
IC 8	TC40175BP			16	8
IC 9	TC40175BP			16	8
IC 10	TC40175BP			16	8
IC 11	HD14503BP			16	8
IC 12	TC40H002P			14	7
IC 13	TC40H366P			16	8
IC 14	SN74LS390N			16	8
IC 15	SN74LS139N			16	8
IC 16	μPD444C			16	8
IC 17	μPD444C			16	8
IC 18	TC40175BP			16	8
IC 19	TC40175BP			16	8
IC 20	SN74LS138N			16	8
IC 21	SN74LS138N			16	8
IC 22	LH0082			24	5
IC 23	LH0080			11	29
IC 24	×8516568R1E			24	12
IC 25	×8516568R2E			24	12
IC 26	×8516568R3E			24	12
IC 27	SN74LS245N			20	10
IC 28	TC4024BP			14	7
IC 29	TC40175BP			16	8
IC 30	TC40175BP			16	8
IC 31	HD14503BP			16	8
IC 32	HD14503BP			16	8
IC 33	HD14503BP			16	8
IC 34	HD14503BP			16	8
IC 35	HD14503BP			16	8
IC 36	HD14503BP			16	8
IC 37	TC40175BP			16	8
IC 38	TC40175BP			16	8
IC 39	HD14503BP			16	8
IC 40	TC40175BP			16	8
IC 41	TC40175BP			16	8
IC101	M54517P	—	—	—	8
IC102	M54517P	—	—	—	8
IC103	M54517P	—	—	—	8
IC104	TC4071BP		14		7
IC105	TC4081BP		14		7
IC106	TC4069UBP		14		7
IC107	M54517P	—	—	—	8
IC108	M54517P	—	—	—	8
IC109	NJM2903D	—	—	—	4
——	——	—	—	—	—
IC111	NJM4558D-D	—	—	—	4
IC112	μPC4558C	—	—	—	4
IC113	TC4013BP		14		7
IC114	M54517P	—	—	—	8
IC115	TC4520BP		16		8
IC116	BX-343	13			7
IC117	TC4021BP		16		8
IC118	TC4021BP		16		8
IC119	M54517P	—	—	—	8
IC120	TC4081BP		14		7
IC121	TC4071BP		14		7
IC122	TC4081BP		14		7
IC123	M54517P	—	—	—	8
IC124	TC4001BP		14		7
IC125	TC4069UBP		14		7
IC126	TC4081BP		14		7
IC127	TC4022BP		16		8
IC128	TC4071BP		14		7
IC129	SN74LS04N		14		7
IC130	HD14503BP		16		8
IC131	TC4081BP		14		7
IC132	TC4073BP		14		7
IC133	TC4071BP		14		7
IC134	TC4071BP		14		7
IC135	TC4069UBP		14		7
IC136	MB8747		22		11
IC137	HD14538BP		16		8
IC138	TC4069UBP		14		7
IC139	TC40538P		16		8
IC140	TC4030BP		14		7
IC141	TC4081BP		14		7
IC142	HD14538BP		16		8
IC143	TC4071BP		14		7
IC144	TC4001BP		14		7
IC145	TC4073BP		14		7
IC146	TC4073BP		14		7
IC147	TC4024BP		14		7

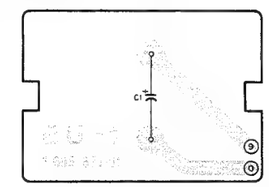


13-78 (a)

13-79 (a)



CN1	B - 1	IC24	D - 11	Q11	F - 10		
CN2	A - 18	IC25	D - 9	Q12	A - 1		
CN3	A - 18	IC26	D - 8	Q13	A - 1		
CN4	A - 16	IC27	D - 7	Q14	A - 4		
CN5	A - 15	IC28	D - 6	Q15	A - 3		
CN6	A - 13	IC29	D - 5	Q16	B - 17		
CN7	A - 12	IC30	D - 5	Q17	A - 1		
CN8	A - 11	IC31	E - 15	Q18	A - 1		
CN9	A - 6	IC32	E - 14	Q19	E - 17		
CN10	A - 5	IC33	E - 13	Q20	A - 15		
CN11	A - 2	IC34	E - 12	Q31	E - 18		
CN12	A - 1	IC35	E - 11	Q32	D - 18		
CN13	G - 1	IC36	E - 10	Q33	D - 18		
CN15	A - 15	IC37	E - 9	Q34	D - 18		
CN21	B - 18	IC38	E - 8	Q35	E - 18		
CN22	C - 18	IC39	E - 7	Q36	D - 18		
CN23	C - 18	IC40	E - 6	Q37	F - 18		
CN31	B - 18	IC41	E - 5	Q38	E - 18		
		IC101	A - 13	Q39	E - 18		
D1	C - 10	IC102	A - 12	Q40	E - 18		
D2	E - 18	IC103	A - 10	Q41	E - 18		
D3	E - 18	IC104	A - 10	Q42	E - 18		
D4	D - 18	IC105	A - 9	Q43	E - 18		
D5	D - 18	IC106	A - 8	Q44	F - 18		
D6	F - 1	IC107	A - 7				
D7	A - 1	IC108	A - 7	RV1	B - 18		
D8	A - 6	IC109	A - 4	RV2	A - 5		
D9	B - 18	IC111	B - 17				
D10	G - 17	IC112	B - 17	TP1	A - 18		
D11	A - 8	IC113	B - 3	TP2	C - 16		
D12	A - 9	IC114	B - 2	TP5	D - 14		
D13	B - 9	IC115	B - 1	TP6	D - 14		
D14	F - 5	IC116	B - 1	TP7	D - 14		
D15	G - 1	IC117	C - 3	TP8	F - 11		
D16	B - 8	IC118	C - 2	TP9	G - 13		
D17	B - 3	IC119	C - 1	TP10	E - 18		
D19	C - 11	IC120	D - 3	TP11	A - 4		
D20	C - 2	IC121	D - 2	TP12	A - 4		
D21	E - 6	IC122	D - 1	TP13	A - 3		
		IC123	D - 1	TP14	B - 3		
E1	A - 18	IC124	E - 3	TP15	F - 1		
E2	A - 10	IC125	E - 2	TP16	F - 1		
E3	B - 1	IC126	E - 1	TP17	A - 3		
E4	D - 1	IC127	E - 1	TP22	C - 16		
E5	G - 8	IC128	F - 2	TP23	G - 7		
E6	F - 18	IC129	F - 18	TP24	G - 9		
		IC130	G - 18	TP25	G - 9		
IC1	B - 15	IC131	G - 17	TP26	A - 8		
IC2	B - 14	IC132	G - 16	TP27	A - 6		
IC3	B - 13	IC133	G - 15	TP28	A - 1		
IC4	B - 12	IC134	G - 14	TP29	A - 1		
IC5	B - 11	IC135	G - 13				
IC6	B - 10	IC136	G - 12	X1	C - 14		
IC7	B - 9	IC137	G - 11				
IC8	B - 8	IC138	G - 10				
IC9	B - 7	IC139	G - 9				
IC10	B - 6	IC140	G - 7				
IC11	B - 5	IC141	G - 6				
IC12	C - 14	IC142	G - 5				
IC13	C - 11	IC143	G - 4				
IC14	C - 10	IC144	G - 3				
IC15	C - 9	IC145	G - 2				
IC16	C - 8	IC146	G - 1				
IC17	C - 7	IC147	G - 1				
IC18	C - 6						
IC19	C - 5	Q2	B - 18				
IC20	D - 15	Q3	A - 18				
IC21	D - 15	Q4	C - 16				
IC22	D - 14	Q5	C - 16				
IC23	D - 12	Q6	C - 10				

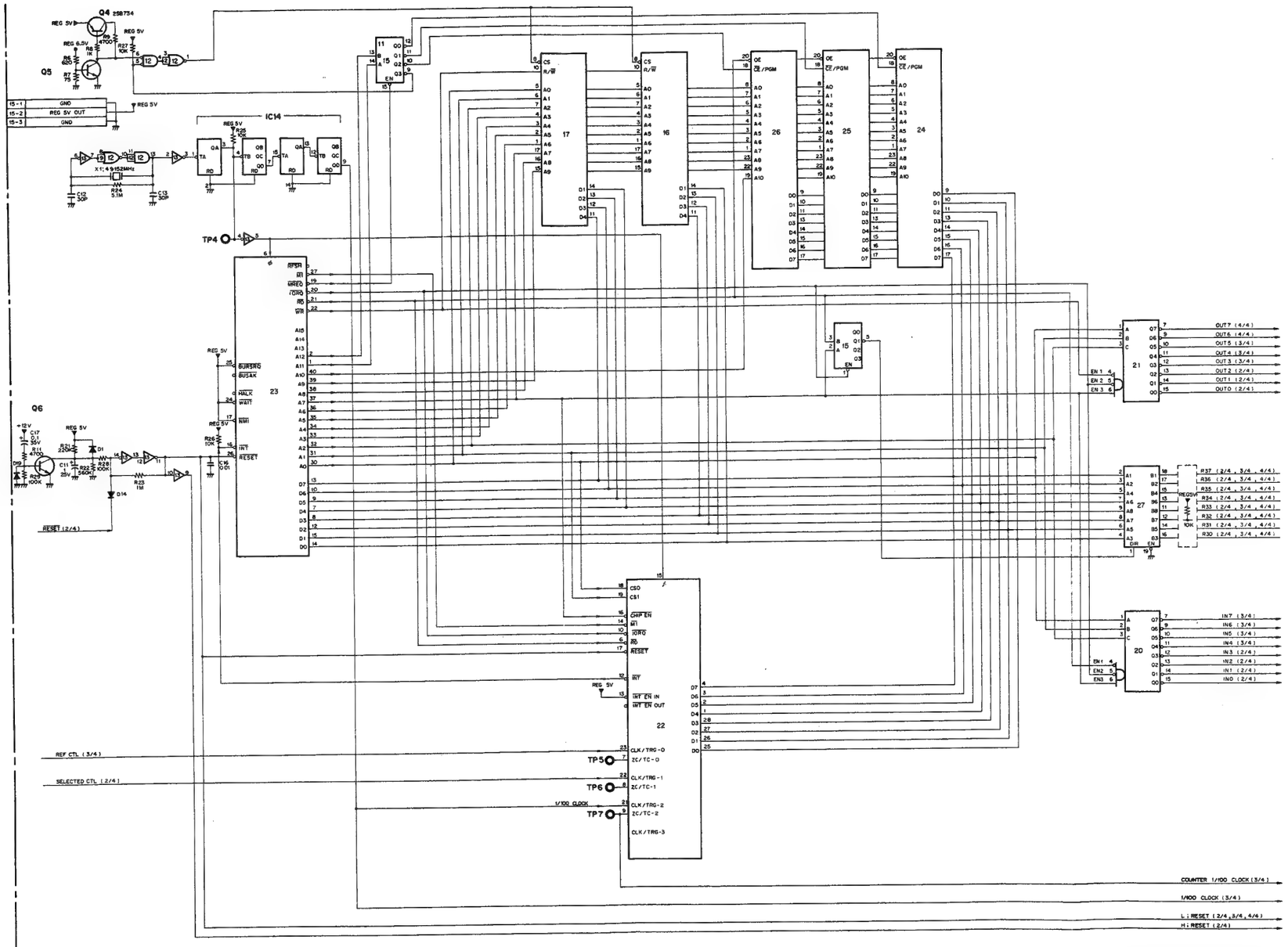


13-79 (a)

13-80 (a)

SY-68C (1/4)
(SYSTEM CONTROL)

S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)



SY-68C(1/4)

- All diodes are 1SS119 unless otherwise noted.
- All transistors are 2SC2603 unless otherwise noted.

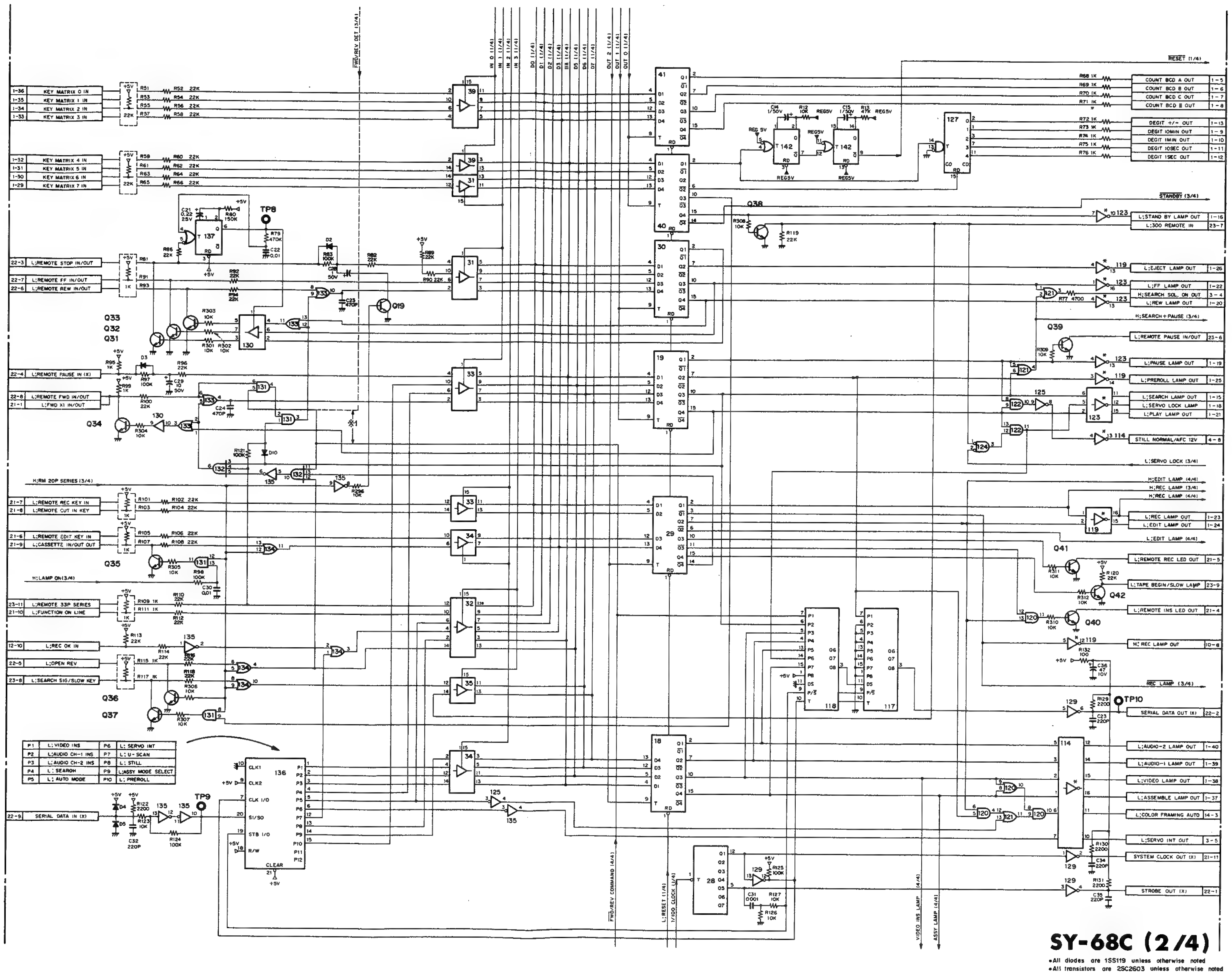
NOTE: **The shaded and ⚠ -marked components are critical to safety.**
Replace only with same components as specified.

SY-68C (2/4)
(SYSTEM CONTROL)

S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)

NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	CHANGED CONNECTION FORMER IC138 ⑫ — ⑤ IC131, ⑪ IC132; NEW IC8 ⑭ — ⑤ IC131, IC118 ⑦ — ⑪ IC132	AEP: 11151 ~ UK: 10561 ~



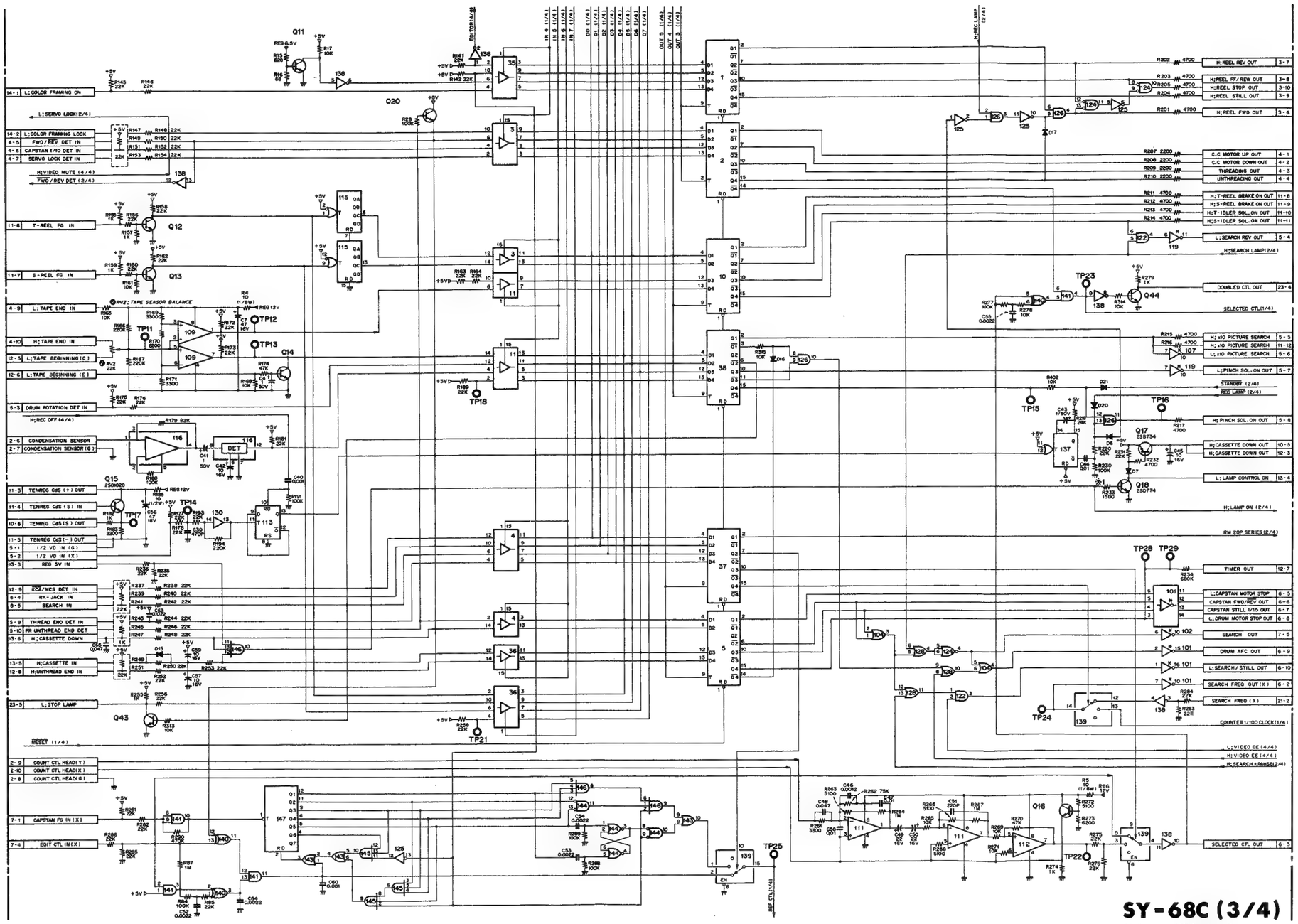
NOTE: The shaded and ⚠ -marked components are critical to safety.
Replace only with same components as specified.

SY-68C (3/4)
(SYSTEM CONTROL)

S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)

NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	R233 4700 → 1500	AEP: 11851 ~ UK: 10751 ~



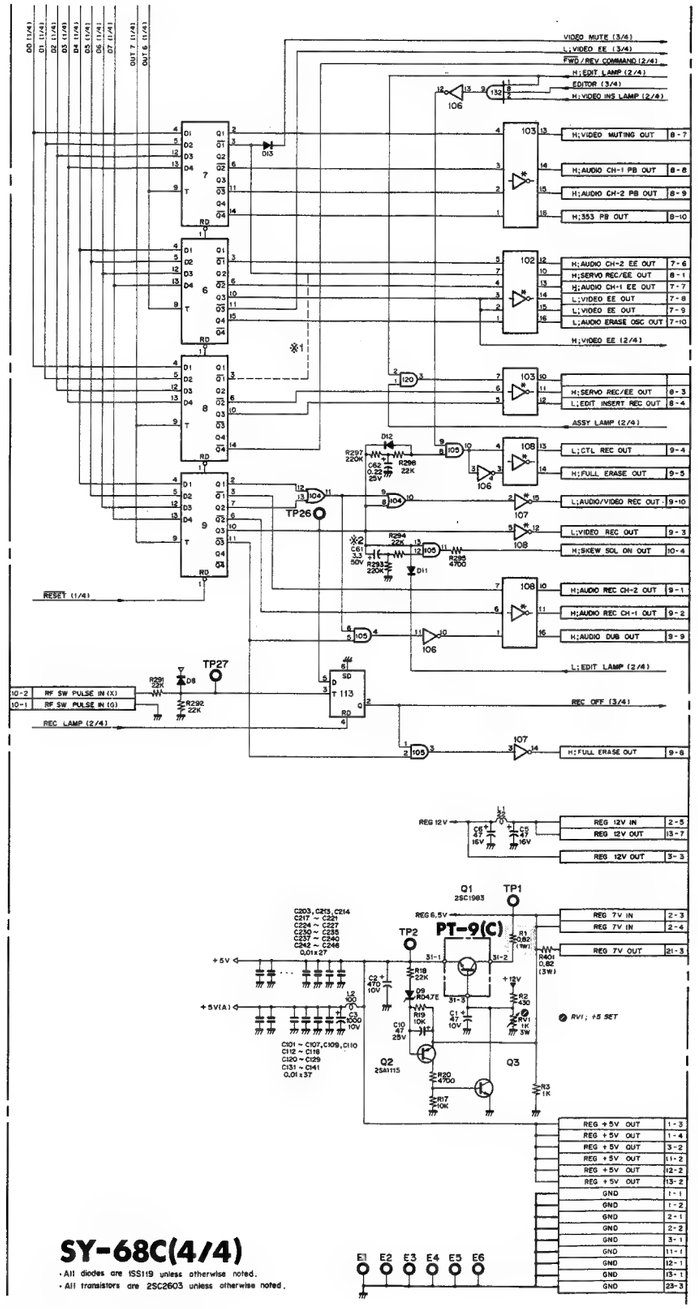
NOTE: **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

SY-68C (4/4)
(SYSTEM CONTROL)

S/N UP TO 14250 (AEP)
S/N UP TO 11300 (UK)

NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	CHANGED CONNECTION FORMER IC8-③—⑦-IC102 NEW IC7-③—⑦-IC102	AEP: 11151 ~ UK: 10551 ~
※2	C61 1/50V →3.3/50V	AEP: 11451 ~ UK: 10651 ~

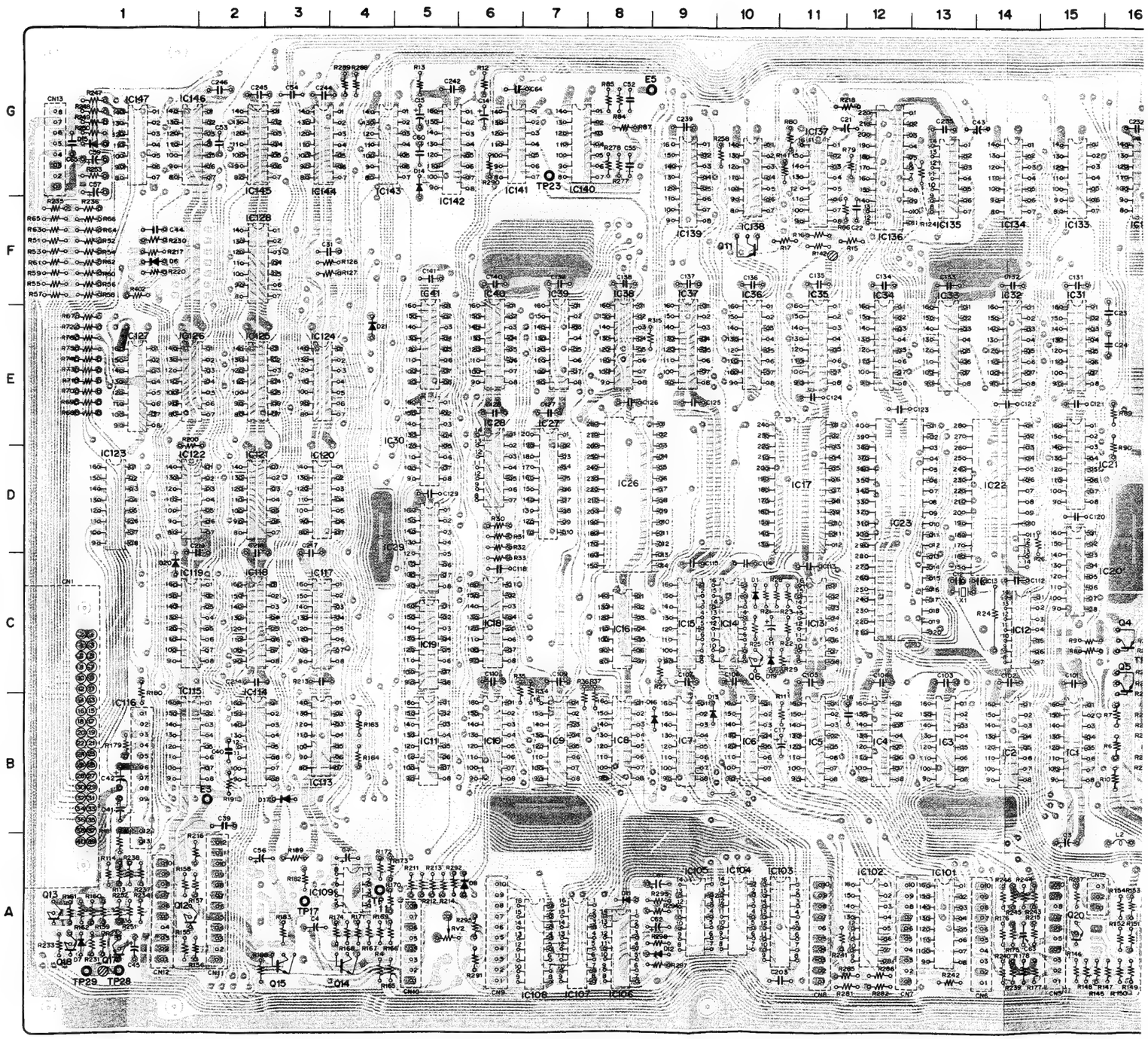


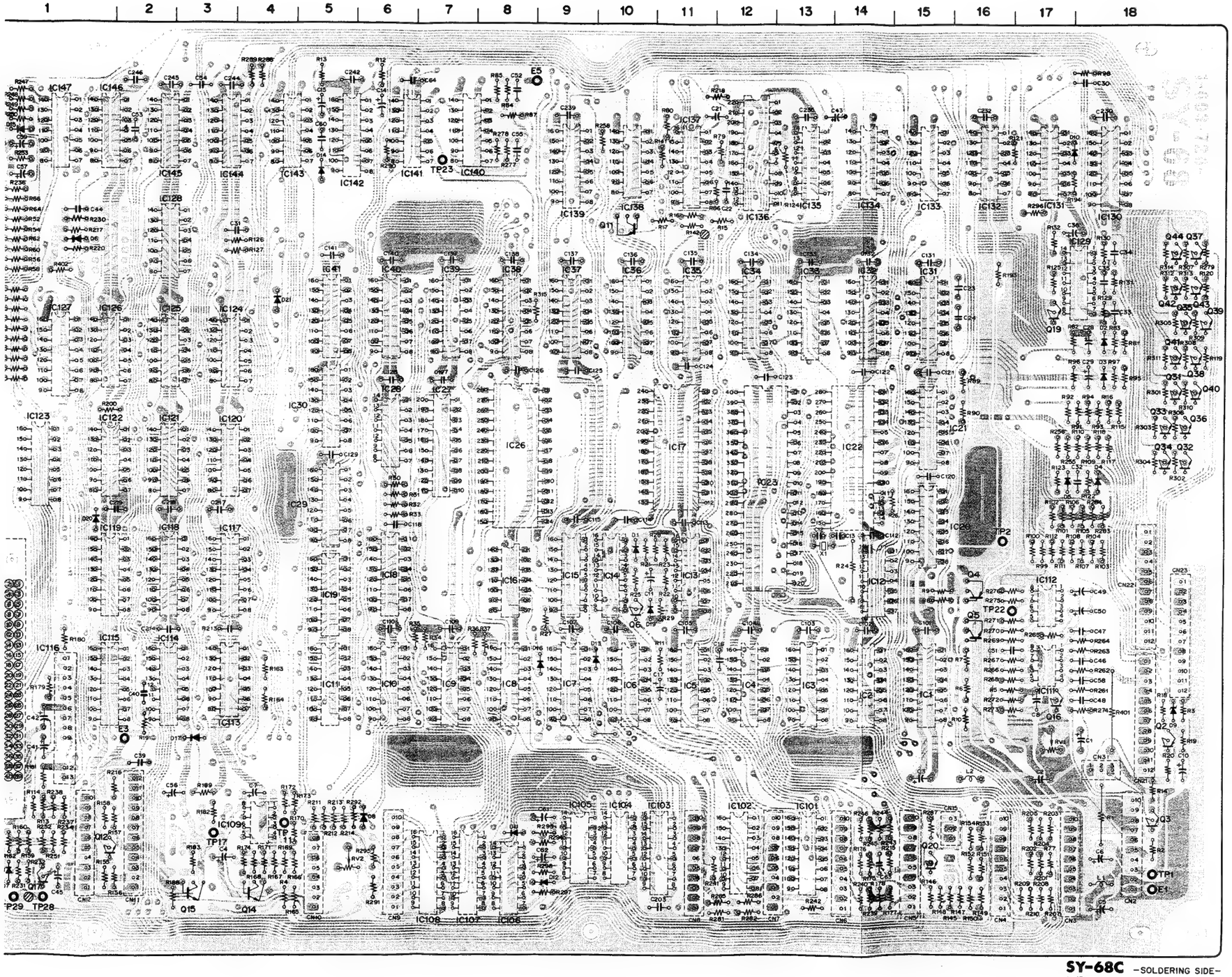
NOTE **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

SY-68C (SYSTEM CONTROL)
BU-1
PT-9

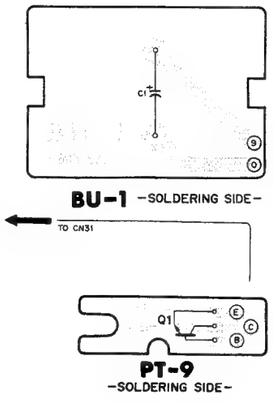
S/N 14251 AND LATER (AEP)
S/N 11301 AND LATER (UK)

REF NO	TYPE	12V (L1)	5V (TP2)	5V (L2)	GND
IC 1	TC40175BP			16	8
IC 2	TC40175BP			16	8
IC 3	HD14503BP			16	8
IC 4	HD14503BP			16	8
IC 5	TC40175BP			16	8
IC 6	TC40175BP			16	8
IC 7	TC40175BP			16	8
IC 8	TC40175BP			16	8
IC 9	TC40175BP			16	8
IC 10	TC40175BP			16	8
IC 11	HD14503BP			16	8
IC 12	TC40H002P			14	7
IC 13	TC40H366P			16	8
IC 14	SN74LS390N			16	8
IC 15	SN74LS139N			16	8
IC 16	SN74LS11N			14	7
IC 17	MSM5128-15RS			24	12
IC 18	TC40175BP			16	8
IC 19	TC40175BP			16	8
IC 20	SN74LS138N			16	8
IC 21	SN74LS138N			16	8
IC 22	LH0082			24	5
IC 23	LH0080			11	29
IC 26	MBM2764S6SPV1			28	14
IC 27	SN74LS245N			20	10
IC 28	TC40248P			14	7
IC 29	TC40175BP			16	8
IC 30	TC40175BP			16	8
IC 31	HD14503BP			16	8
IC 32	HD14503BP			16	8
IC 33	HD14503BP			16	8
IC 34	HD14503BP			16	8
IC 35	HD14503BP			16	8
IC 36	HD14503BP			16	8
IC 37	TC40175BP			16	8
IC 38	TC40175BP			16	8
IC 39	HD14503BP			16	8
IC 40	TC40175BP			16	8
IC 41	TC40175BP			16	8
IC101	M54517P	—	—	—	8
IC102	M54517P	—	—	—	8
IC 103	M54517P	—	—	—	8
IC 104	TC4071BP		14		7
IC 105	TC4081BP		14		7
IC 106	TC4069UBP		14		7
IC 107	M54517P	—	—	—	8
IC 108	M54517P	—	—	—	8
IC 109	NJM2903D	—	—	—	4
—	——	—	—	—	—
IC 111	NJM4558D-D	—	—	—	4
IC 112	μPC4558C	—	—	—	4
IC 113	TC4013BP		14		7
IC 114	M54517P	—	—	—	8
IC 115	TC45209P		16		8
IC 116	BX-343	13			7
IC 117	TC4021BP		16		8
IC 118	TC4021BP		16		8
IC 119	M54517P	—	—	—	8
IC 120	TC4081BP		14		7
IC 121	TC4071BP		14		7
IC 122	TC4081BP		14		7
IC 123	M54517P	—	—	—	8
IC 124	TC4001BP		14		7
IC 125	TC4069UBP		14		7
IC 126	TC4081BP		14		7
IC 127	TC4022BP		16		8
IC 128	TC4071BP		14		7
IC 129	SN74LS04N		14		7
IC 130	HD14503BP		16		8
IC 131	TC4081BP		14		7
IC 132	TC4073BP		14		7
IC 133	TC4071BP		14		7
IC 134	TC4071BP		14		7
IC 135	TC4069UBP		14		7
IC 136	MB8747		22		11
IC 137	HD14538BP		16		8
IC 138	TC4069UBP		14		7
IC 139	TC40538P		16		8
IC 140	TC4030BP		14		7
IC 141	TC4081BP		14		7
IC 142	HD14538BP		16		8
IC 143	TC4071BP		14		7
IC 144	TC4001BP		14		7
IC 145	TC4073BP		14		7
IC 146	TC4073BP		14		7
IC 147	TC4024BP		14		7





CN1	B - 1	IC26	D - 8	Q11	F - 10
CN2	A - 18	IC27	D - 7	Q12	A - 1
CN3	A - 18	IC28	D - 6	Q13	A - 1
CN4	A - 16	IC29	D - 5	Q14	A - 4
CN5	A - 15	IC30	D - 5	Q15	A - 3
CN6	A - 13	IC31	E - 15	Q16	B - 17
CN7	A - 12	IC32	E - 14	Q17	A - 1
CN8	A - 11	IC33	E - 13	Q18	A - 1
CN9	A - 6	IC34	E - 12	Q19	E - 17
CN10	A - 5	IC35	E - 11	Q20	A - 15
CN11	A - 2	IC36	E - 10	Q31	E - 18
CN12	A - 1	IC37	E - 9	Q32	D - 18
CN13	G - 1	IC38	E - 8	Q33	D - 18
CN15	A - 15	IC39	E - 7	Q34	D - 18
CN21	B - 18	IC40	E - 6	Q35	E - 18
CN22	C - 18	IC41	E - 5	Q36	D - 18
CN23	C - 18	IC101	A - 13	Q37	F - 18
CN31	B - 18	IC102	A - 12	Q38	E - 18
		IC103	A - 10	Q39	E - 18
D1	C - 10	IC104	A - 10	Q40	E - 18
D2	E - 18	IC105	A - 9	Q41	E - 18
D3	E - 18	IC106	A - 8	Q42	E - 18
D4	D - 18	IC107	A - 7	Q43	E - 18
D5	D - 18	IC108	A - 7	Q44	F - 18
D6	F - 1	IC109	A - 4		
D7	A - 1	IC111	B - 17	RV1	B - 18
D8	A - 6	IC112	B - 17	RV2	A - 5
D9	B - 18	IC113	B - 3		
D10	G - 17	IC114	B - 2	TP1	A - 18
D11	A - 8	IC115	B - 1	TP2	C - 16
D12	A - 9	IC116	B - 1	TP11	A - 4
D13	B - 9	IC117	C - 3	TP17	A - 3
D14	F - 5	IC118	C - 2	TP22	C - 16
D15	G - 1	IC119	C - 1	TP23	G - 7
D16	R - R	IC120	D - 3	TP28	A - 1
D17	B - 3	IC121	D - 2	TP29	A - 1
D19	C - 11	IC122	D - 1		
D20	C - 1	IC123	D - 1	X1	C - 14
D21	E - 4	IC124	E - 3		
		IC125	E - 2		
E1	A - 18	IC126	E - 1		
E3	B - 1	IC127	E - 1		
E5	G - 8	IC128	F - 2		
		IC129	F - 18		
IC1	B - 15	IC130	G - 18		
IC2	B - 14	IC131	G - 17		
IC3	B - 13	IC132	G - 16		
IC4	B - 12	IC133	G - 15		
IC5	B - 11	IC134	G - 14		
IC6	B - 10	IC135	G - 13		
IC7	B - 9	IC136	G - 12		
IC8	B - 8	IC137	G - 11		
IC9	B - 7	IC138	G - 10		
IC10	B - 6	IC139	G - 9		
IC11	B - 5	IC140	G - 7		
IC12	C - 14	IC141	G - 6		
IC13	C - 11	IC142	G - 5		
IC14	C - 10	IC143	G - 4		
IC15	C - 9	IC144	G - 3		
IC16	C - 8	IC145	G - 2		
IC17	D - 11	IC146	G - 1		
IC18	C - 6	IC147	G - 1		
IC19	C - 5				
IC20	D - 15	Q2	B - 18		
IC21	D - 15	Q3	A - 18		
IC22	D - 14	Q4	C - 16		
IC23	D - 12	Q5	C - 16		
		Q6	C - 10		

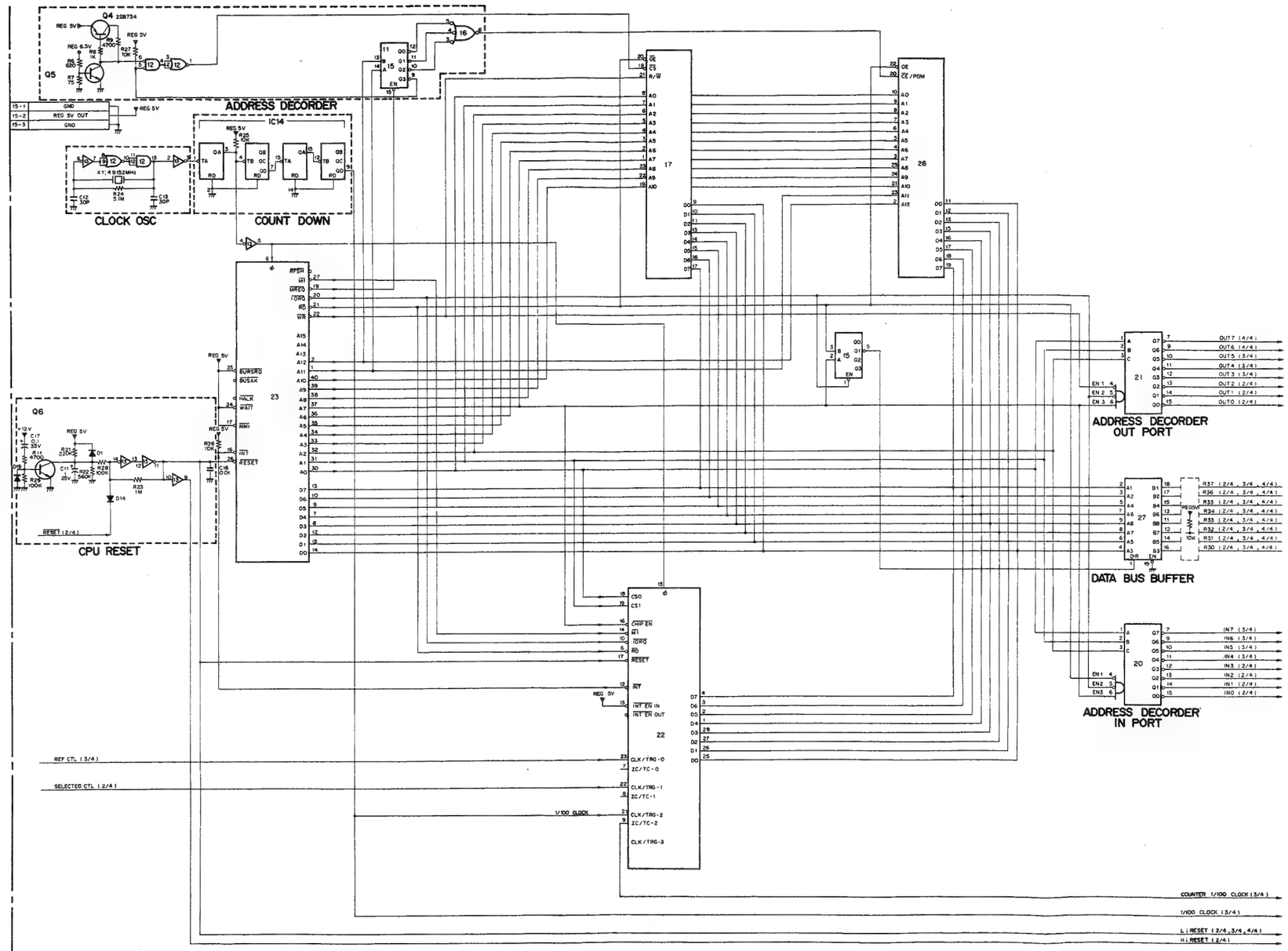


13-79 (b)

13-80 (b)

SY-68C (1/4)
(SYSTEM CONTROL)

S/N 14251 AND LATER (AEP)
S/N 11301 AND LATER (UK)



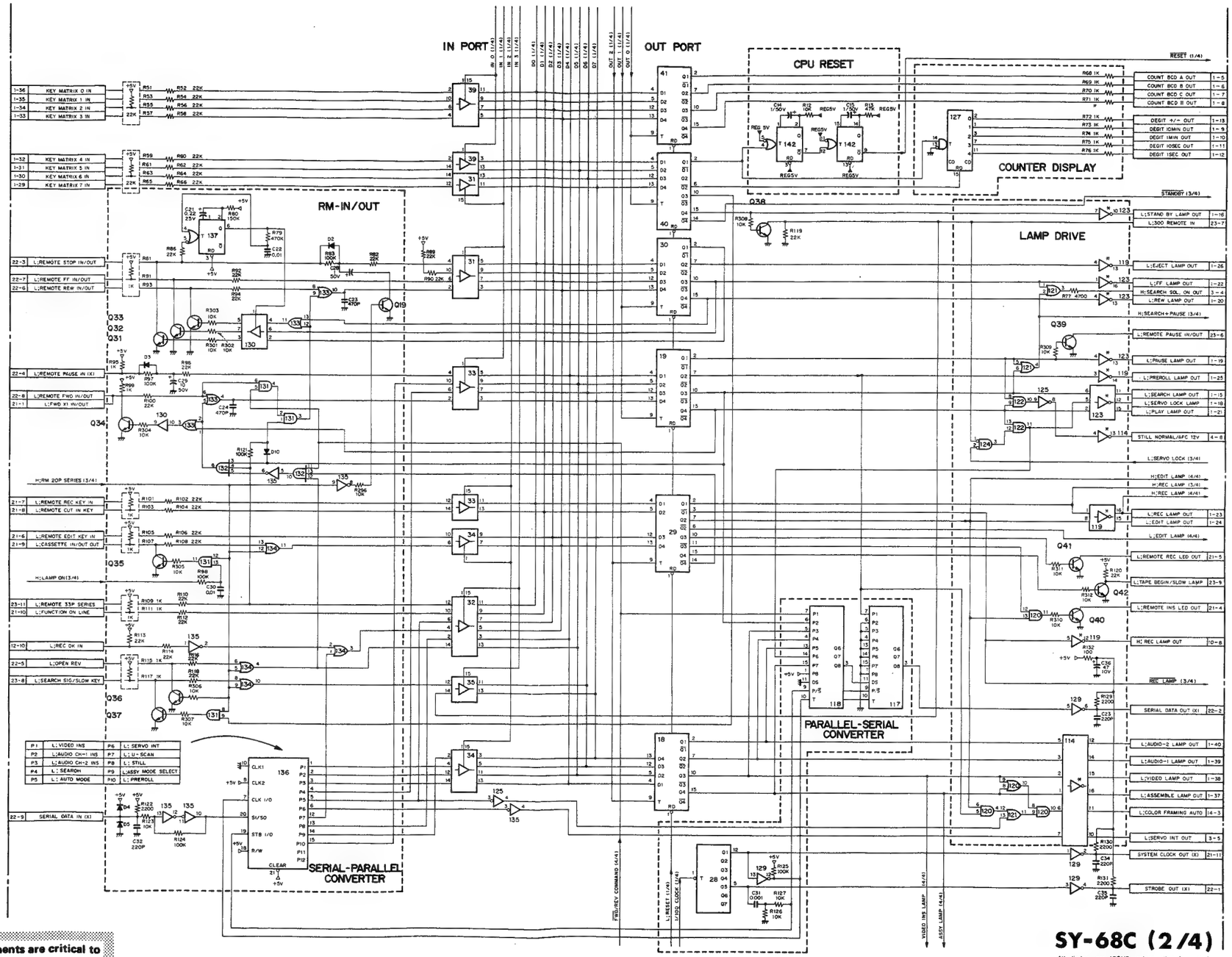
SY-68C(1/4)

- All diodes are 1SS119 unless otherwise noted.
- All transistors are 2SC2603 unless otherwise noted
- 1-503-726-46
- V0-5800PS

NOTE: **The shaded and ⚠ -marked components are critical to safety.**
Replace only with same components as specified.

SY-68C (2/4)
(SYSTEM CONTROL)

S/N 14251 AND LATER (AEP)
S/N 11301 AND LATER (UK)

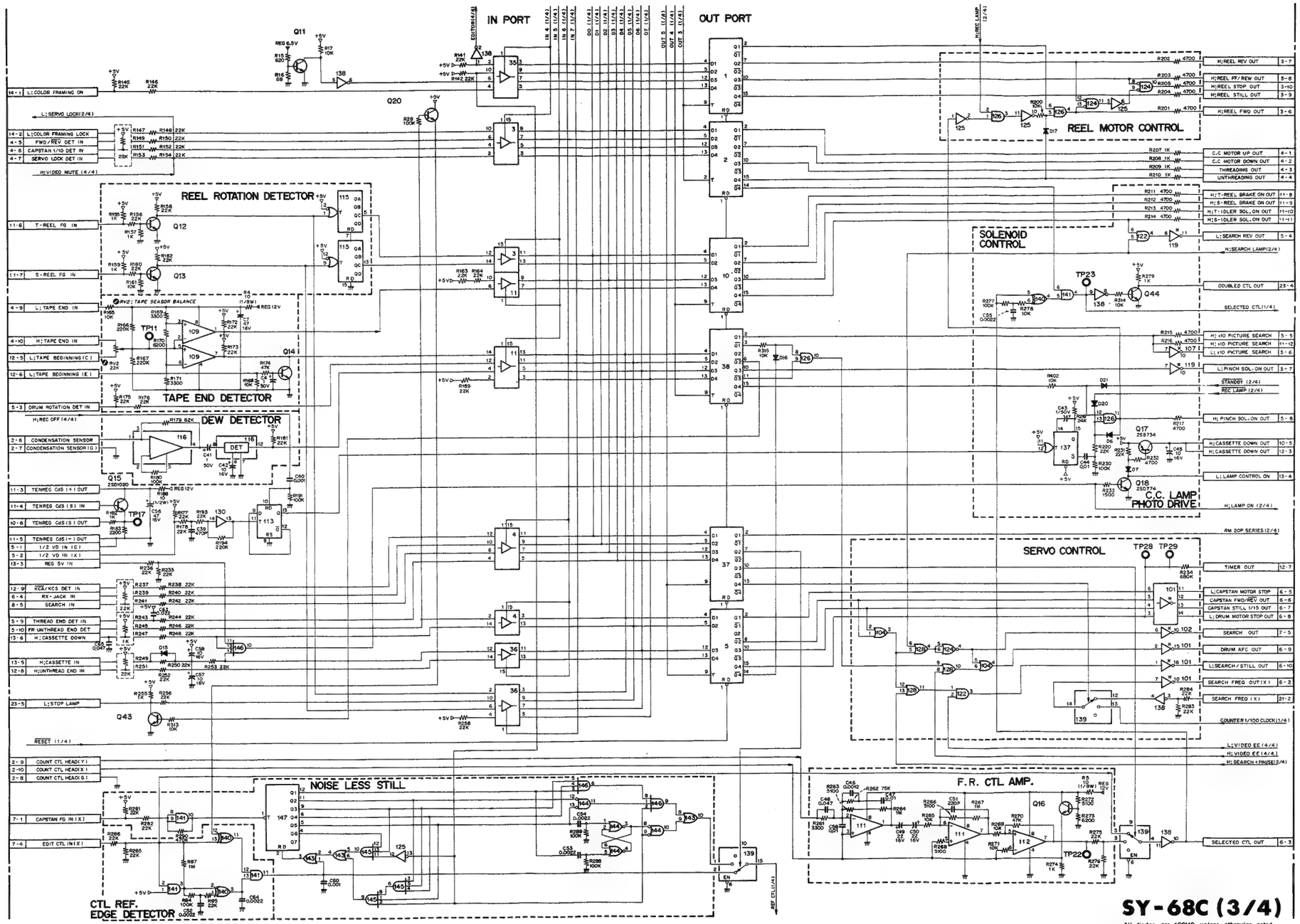


NOTE: **The shaded and ⚠ -marked components are critical to safety.**
Replace only with same components as specified.

- All diodes are 1SS119 unless otherwise noted
- All transistors are 2SC2603 unless otherwise noted
- †1-603-726-46
- VO-5800PS

SY-68C (3/4)
(SYSTEM CONTROL)

S/N 14251 AND LATER (AEP)
S/N 11301 AND LATER (UK)



SY-68C (3/4)

- All diodes are 1SS119 unless otherwise noted
- All transistors are 2SC2603 unless otherwise noted

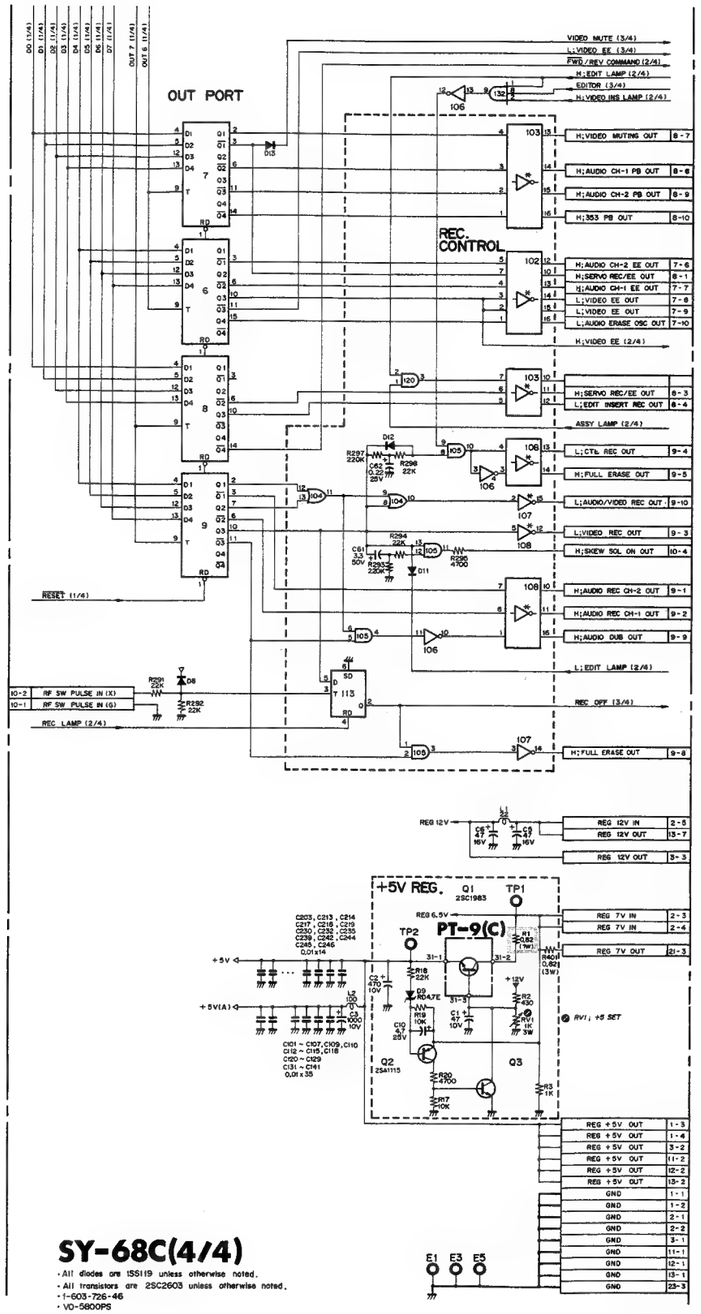
1-603-726-46
VO-5900PS

NOTE: **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

SY-68C FRAME

SY-68C (4/4)
(SYSTEM CONTROL)

S/N 14251 AND LATER (AEP)
S/N 11301 AND LATER (UK)



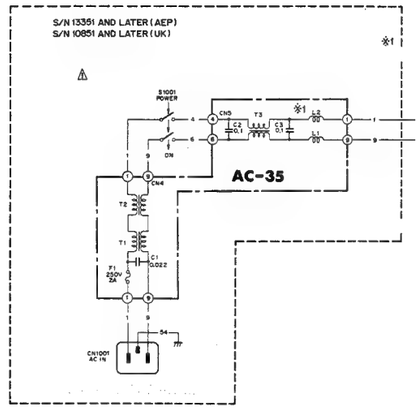
SY-68C(4/4)

- All diodes are 1SS119 unless otherwise noted.
- All transistors are 2SC2603 unless otherwise noted.
- 1-603-726-46
- VD-5800PS

ADDED '84. 3

13-87 (b)

FRAME

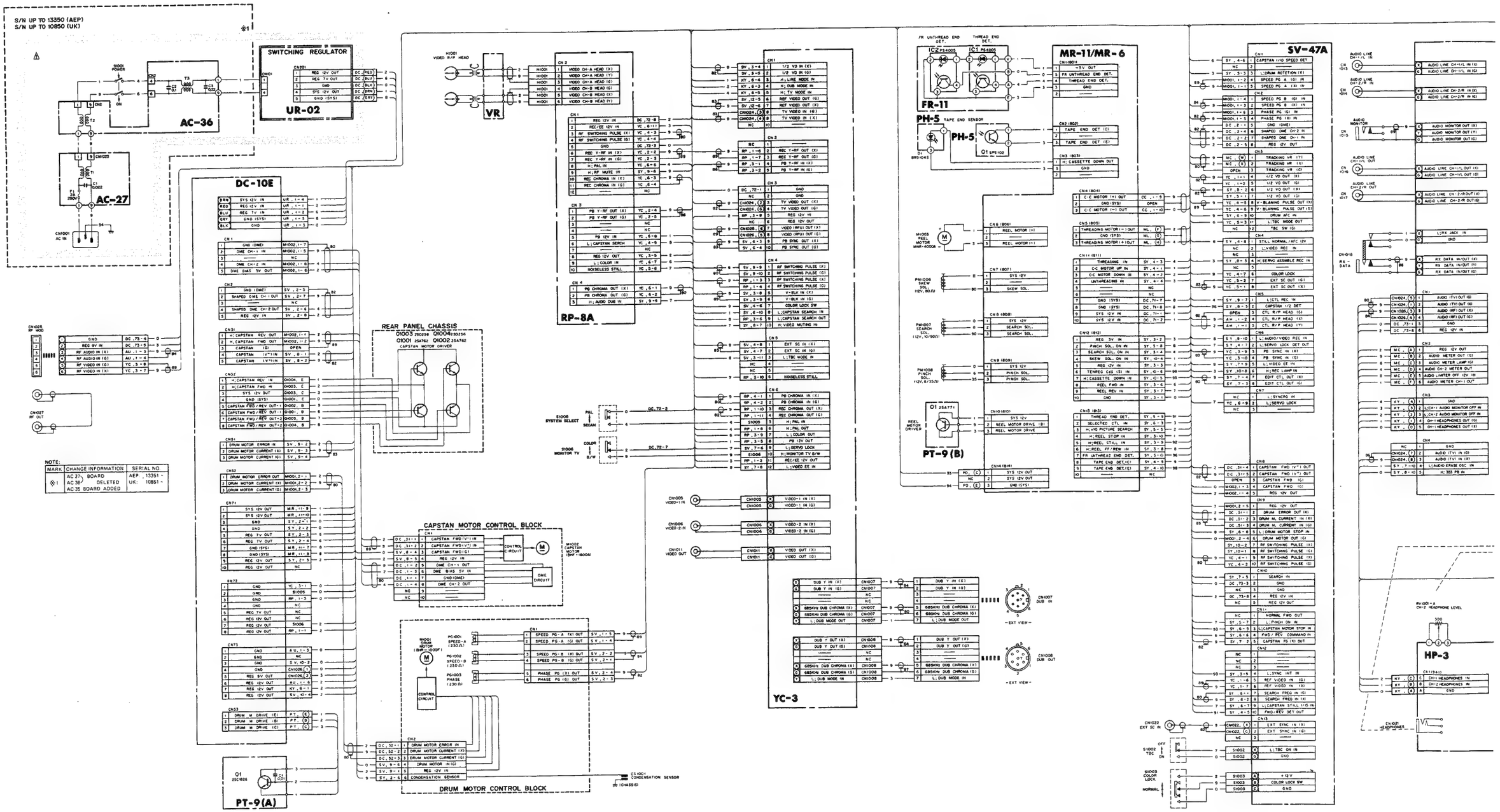


NOTE: **The shaded and ⚠-marked components are critical to safety.**
Replace only with same components as specified.

13-88 (b)

FRAME FRAME

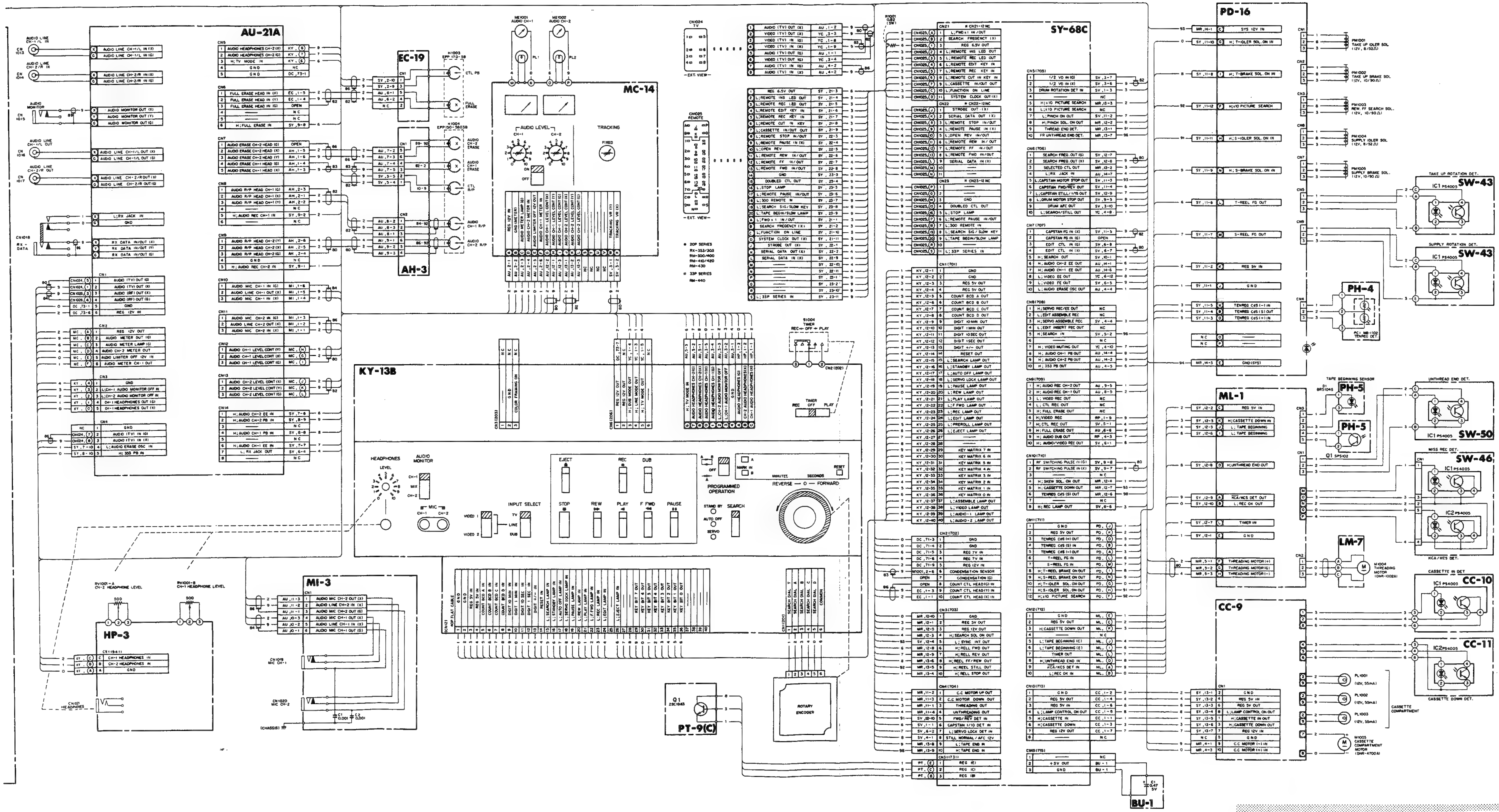
FRAME



NOTE:

MARK	CHANGE INFORMATION	SERIAL NO.
※1	AC-27, AC-36 DELETED AC-35 BOARD ADDED	AEP : 13351 - UK : 10851 -

FRAME FRAME



NOTE: **The shaded and ⚠ -marked components are critical to safety. Replace only with same components as specified.**

SECTION 14
SPARE PARTS AND FIXTURE

14-1. PARTS INFORMATION

1. Safety Related Component Warning
   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.
2. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts."
   - This manual's exploded views and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present".
   - Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.
3. Printed Components in Bold-Face type on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
4. Item with no part number and/or no description are not stocked because they are seldom required for routine service.
5. (T) after a spring description is shown on the exploded views in order to indicate the number of a spring turn required for the use.
   (Example) Spring, tension (24T); This spring must be cut at its 24th turn for actual use.

14-2. EXPLODED VIEW

- Exploded views are composed of the following blocks.

(1) Reel Chassis (1)
- Supply reel table
- Supply tension regulator arm
- Search solenoid
- Skew solenoid
- Supply main brake
- Reel motor

(2) Reel Chassis (2)
- Take-up reel table
- FF/REW idler
- Take-up main brake
- Take-up tension regulator arm
- R brake
- Still/miss-rec. detector

(3) Reel Chassis (3)
- Supply idler solenoid
- Take-up idler solenoid
- FF/REW idler pulley
- Supply brake solenoid
- Take-up brake solenoid
- 10 times picture search solenoid

(4) Threading
- Threading ring
- Gear box
- T correction guide
- Tape beginning sensor
- FR detector

(5) Threading Arm
- T drawer arm
- S drawer arm
- Drawer lever

(6) Drum/Capstan
- Head drum
- Capstan motor
- Audio/CTL head
- Brush

(7) Erase Head Base
- Erase head base
- S guard

(8) Pinch Lever
- Pinch lever
- Pinch roller pre-set cam
- Pinch solenoid

(9) Cassette-up Compartment

(10) Function Control
- Function control panel (except ornamental panel)

(11) Chassis (1)
- Chassis (bottom view)

(12) Chassis (2)
- Chassis (rear view)

(13) Meter Panel

(14) Chassis (3)
- Chassis (top view)

(15) Printed Circuit Board
- Printed circuit board (except bottom block)

(16) Ornamental Panel (1)
- Ornamental panel (except control panel)

(17) Ornamental Panel (2)
- Control panel

(18) Switching Regulator (UR-01)

SCREW

	PS	PSW	B (BZn N)	B (Cr-N)	PTT	PTTWH
2.6 x 4	7-621-972-05	———	7-621-912-10	7-621-912-18	———	———
2.6 x 6	7-621-972-25	7-621-981-15	7-621-912-30	7-621-912-38	———	———
2.6 x 8	7-621-972-35	7-621-981-25	7-621-912-40	7-621-912-48	———	———
3 x 5	7-686-446-01	———	———	———	———	
3 x 6	7-686-447-01	7-686-527-01	7-686-624-09	7-686-624-04	7-687-411-31	7-687-510-31
3 x 8	7-686-448-01	7-686-528-01	7-686-625-09	7-686-625-04	7-687-412-31	7-687-511-31
3 x 10	7-686-449-01	7-686-529-01	7-686-626-09	7-686-626-04	7-687-413-31	7-687-512-31
3 x 12	7-686-450-01	7-686-530-01	7-686-627-09	7-686-627-04	7-687-414-31	7-687-513-31
3 x 16	7-686-452-01	7-686-532-01	7-686-629-09	7-686-629-04	———	———
3 x 20	7-686-453-01	7-686-533-01	7-686-630-09	7-686-630-04	———	———
3 x 25	7-686-454-01	7-686-534-01	7-686-631-09	7-686-631-04		
4 x 8	7-686-468-01	7-686-548-01	7-686-635-09	7-686-635-04	———	———
4 x 12	7-686-470-01	7-686-550-01	7-686-637-09	7-686-637-04	———	———
4 x 14	7-686-471-01	———	7-686-638-09	7-686-638-04	———	———
4 x 16	7-686-472-01	———	7-686-639-09	7-686-639-04	———	———
4 x 20	7-686-473-01	———	7-686-640-09	7-686-640-04	———	———

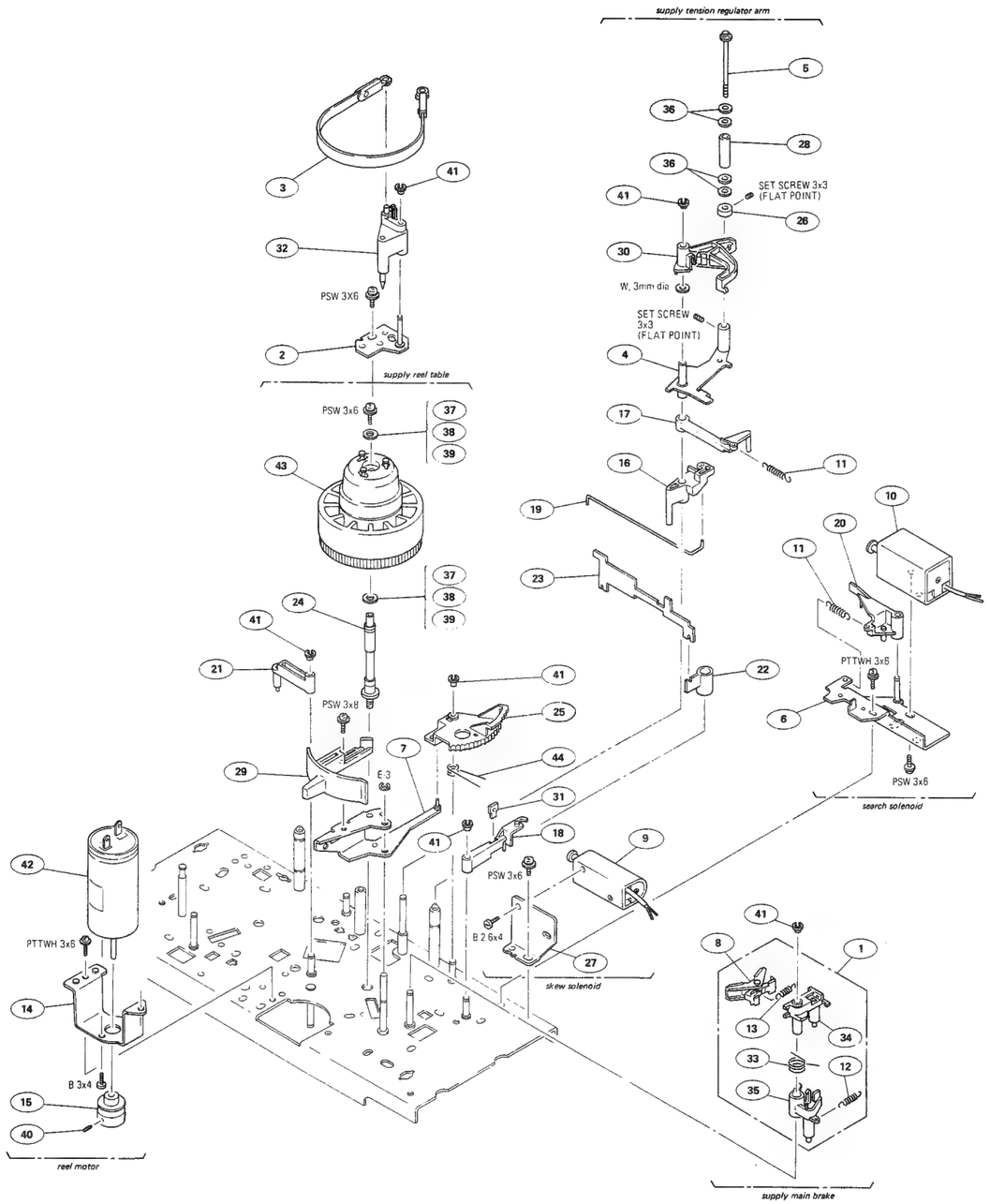
SCREW WASHER

	HEXAGON SOCKET SCREW	HEXAGON SET SCREW	(–) SET SCREW FLAT POINT	(–) SET SCREW CONE POINT
2.6 x 3	———	7-621-734-09	———	———
2.6 x 4	7-621-996-24	7-621-735-09	———	———
2.6 x 5	———	7-621-736-09	———	———
2.6 x 6	7-683-412-05	———	———	7-621-712-55
2.6 x8	7-683-413-05	———	———	7-621-712-65
2.6 x 10	———	———	———	7-621-712-75
3 x 4	———	7-683-238-01	———	———
3 x 5	———	———	7-683-175-01	———
3 x 6	7-683-403-04	———	7-683-176-01	7-683-176-21
3 x 8	7-683-404-04	———	———	7-683-177-21
3 x 10	7-683-405-04	———	———	7-683-178-21
3 x 12	———	———	———	7-683-179-21

	FLAT WASHER SMALL W.	FLAT WASHER MIDDLE W.	SPRING WASHER SW.	TOOTHED WASHER TYPE B LW.	HEXAGON NUT N.
2.6 mm	7-688-002-01	7-688-002-12	7-623-207-22	7-623-421-07	7-622-207-05
3 mm	7-688-003-01	7-688-003-12	7-688-003-11	7-623-422-07	7-684-023-04
4 mm	7-688-004-01	7-688-004-12	7-623-210-22	7-623-423-07	7-684-024-04
5 mm	7-688-005-01	7-688-005-01	7-623-212-22	———	7-684-025-04

	STOP RING E TYPE E.
2	7-624-104-04
2.3	7-624-105-04
3	7-624-106-04
4	7-624-108-04
5	7-624-109-04
6	7-624-110-04

Supply Side Reel Chassis



No.	Parts No.	Description
1	**A-6741-038-B**	**BRAKE ASS'Y, MAIN**
2	X-3668-706-0	BASE ASS'Y, S TENSION REGULATOR
3	**X-3668-707-0**	**BAND ASS'Y, S TENSION REGULATOR**
4	**X-3668-708-0**	**ARM (A) ASS'Y, S TENSION REGULATOR**
5	**X-3668-709-0**	**SHAFT (1) ASS'Y, ROLLER**
6	X-3668-717-0	BASE ASS'Y, SEARCH
7	X-3668-725-0	ARM (C) ASS'Y, SKEW
8	**X-3668-749-2**	**HOLDER ASS'Y, LINING**
9	**1-454-283-00**	**SOLENOID, PLUNGER**
10	**1-454-284-00**	**SOLENOID, PLUNGER**
11	**3-534-238-XX**	**SPRING, TENSION (23T)**
12	**3-535-369-XX**	**SPRING, TENSION (12T)**
13	**3-548-124-00**	**SPRING, TENSION**
14	3-668-783-00	BRACKET, MOTOR
15	**3-668-784-00**	**PULLEY, MOTOR**
16	**3-668-787-02**	**ARM, S DETECTION**
17	3-668-794-00	ARM (A), SKEW
18	3-668-797-00	ARM, SKEW LOCK
19	**3-668-804-00**	**LINK, DETECTION, TENSION**
20	**3-668-808-00**	**ARM, FWD, SEARCH**
21	3-668-818-00	LEVER (A), FR
22	3-668-821-00	LEVER (D), FR
23	3-668-822-00	PLATE, CANCEL, FR
24	3-668-827-00	SHAFT (S), REEL
25	**3-668-835-00**	**ARM (B), SKEW**
26	**3-668-874-00**	**FLANGE (1), LOWER**
27	3-668-875-00	BRACKET
28	X-3668-727-0	GUIDE ASS'Y, TAPE
29	**3-668-920-00**	**LEVER, SKEW**
30	**3-668-936-00**	**ARM (B), S TENSION REGULATOR**
31	**3-668-937-00**	**CLAW, SKEW LOCK**
32	3-668-939-00	ARM, BAND LOCK
33	**3-668-966-00**	**SPRING**
34	3-668-970-00	ARM, BRAKE
35	3-668-971-00	ARM, BRAKE RELEASE
36	**3-701-438-01**	**WASHER, POLY 2.5MM DIA., 0.13T**
37	**3-701-444-01**	**WASHER, POLY 6MM DIA., 0.13T**
38	**3-701-444-11**	**WASHER, POLY 6MM DIA., 0.25T**
39	**3-701-444-21**	**WASHER, POLY 6MM DIA., 0.5T**
40	**3-701-506-01**	**SET SCREW, DOUBLE POINT 3x4**
41	**3-703-074-00**	**CAP 3, SHAFT**
42	**8-835-047-01**	**MOTOR, DC (MNR-4000A)**
43	**A-6739-017-B**	**TABLE ASS'Y, REEL**
44	**3-668-795-00**	**SPRING**

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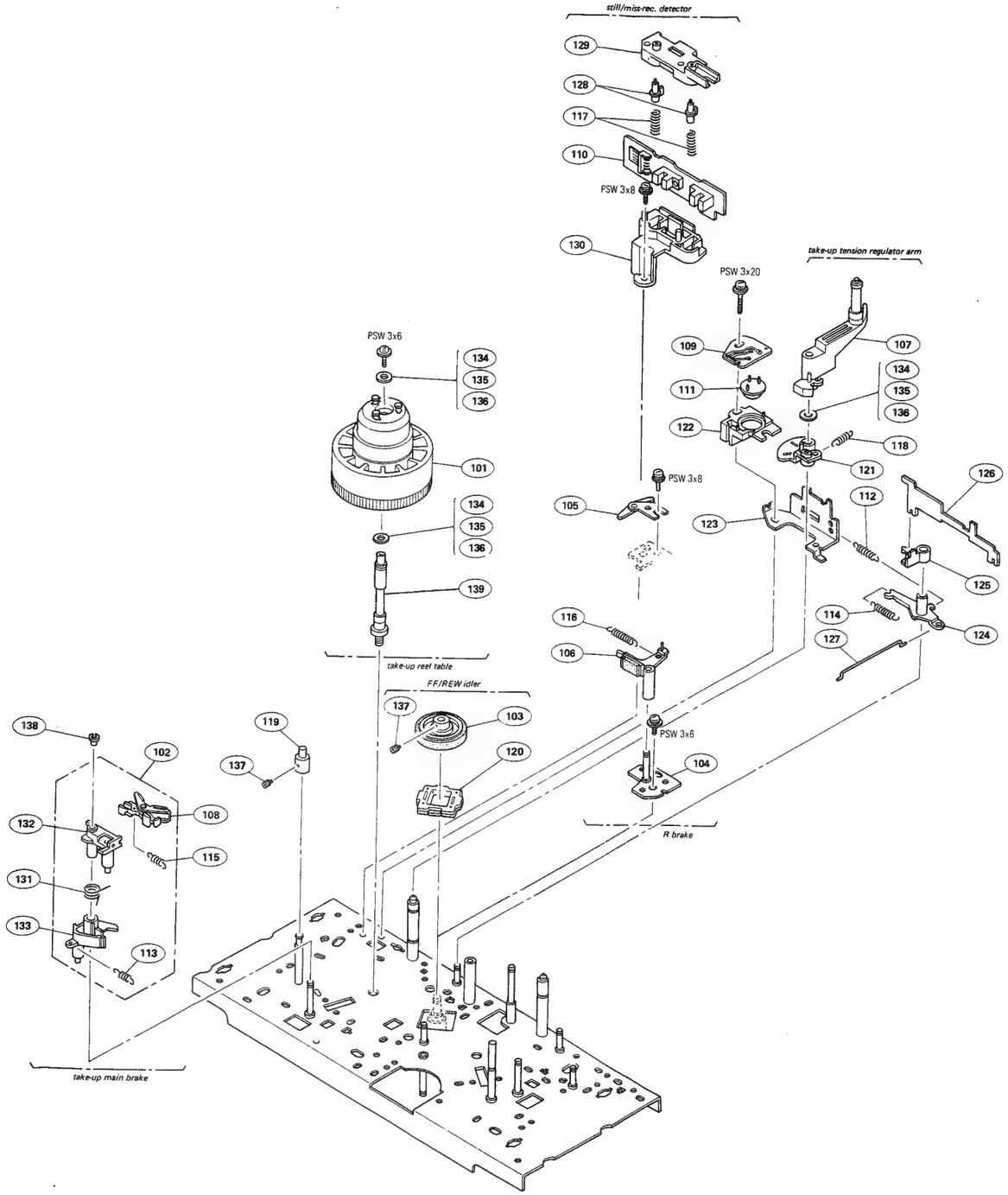
Take-up Side Reel Chassis



No.	Parts No.	Description
101	**A-6739-017-A**	**TABLE ASS'Y, REEL**
102	**A-6741-038-B**	**BRAKE ASS'Y, MAIN**
103	**X-3646-026-0**	**IDLER ASS'Y, FF**
104	X-3668-705-0	BASE ASS'Y, R BRAKE
105	X-3668-726-0	LEVER ASS'Y, R CANCEL
106	**X-3668-737-0**	**BRAKE ASS'Y, R**
107	**X-3668-738-0**	**ARM ASS'Y, T TENSION REGULATOR**
108	**X-3668-749-2**	**HOLDER ASS'Y, LINING**
109	1-603-589-00	PRINTED CIRCUIT BOARD, PH-4
110	1-603-590-00	PRINTED CIRCUIT BOARD, SW-46
111	**1-806-232-11**	**DETECTOR MB-1102**
112	**3-534-238-XX**	**SPRING, TENSION (23T)**
113	**3-535-369-XX**	**SPRING, TENSION (12T)**
114	**3-630-615-XX**	**SPRING, TENSION (18T)**
115	**3-548-124-00**	**SPRING, TENSION**
116	**3-549-861-00**	**SPRING, TENSION**
117	**3-642-126-00**	**SPRING, COMPRESSION**
118	**3-642-427-00**	**SPRING, TENSION**
119	3-668-031-00	RETAINER (UPPER), CASSETTE
120	3-668-780-00	CUSHION, IDLER
121	**3-668-788-00**	**ARM, T DETECTION**
122	3-668-789-00	HOLDER, BRIDGE, PHOTO
123	3-668-798-00	STOPPER, T TENSION REGULATOR
124	3-668-819-00	LEVER (B), FR
125	3-668-820-00	LEVER (C), FR
126	3-668-822-00	PLATE, CANCEL, FR
127	3-668-823-00	ROD, PULL, FR
128	**3-668-929-00**	**ACTUATOR, SR**
129	3-668-931-00	HOLDER (UPPER), SR
130	3-668-932-00	HOLDER (LOWER), SR
131	**3-668-966-00**	**SPRING**
132	3-668-970-00	ARM, BRAKE
133	3-668-971-00	ARM, BRAKE RELEASE
134	**3-701-444-01**	**WASHER, POLY 6MM DIA., 0.13T**
135	**3-701-444-11**	**WASHER, POLY 6MM DIA., 0.25T**
136	**3-701-444-21**	**WASHER, POLY 6MM DIA., 0.5T**
137	**3-701-506-01**	**SET SCREW, DOUBLE POINT 3x4**
138	**3-703-074-00**	**CAP 3, SHAFT**
139	3-668-766-00	SHAFT (T), REEL

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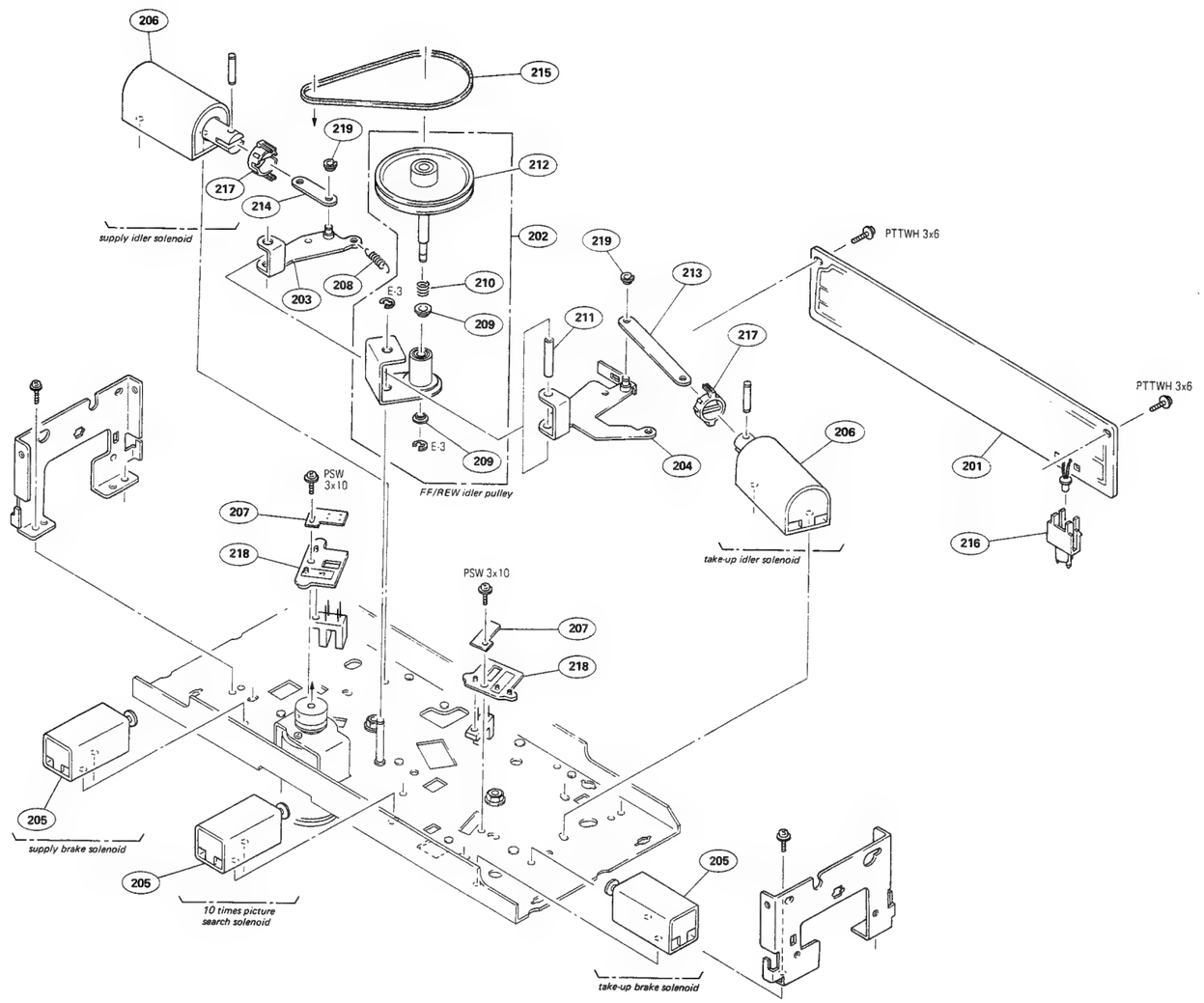
Reel Chassis (bottom view)



No.	Parts No.	Description
⚠ 201	A-6717-212-A	MOUNTED CIRCUIT BOARD, PD-16
202	**A-6740-069-A**	**PULLEY BLOCK ASS'Y, IDLER**
203	X-3668-703-0	LEVER ASS'Y, S
204	X-3668-704-0	LEVER ASS'Y, T
205	**1-454-284-00**	**SOLENOID, PLUNGER**
206	**1-454-285-00**	**SOLENOID, PLUNGER**
207	1-603-434-00	PRINTED CIRCUIT BOARD, SW-43
208	**3-437-452-00**	**SPRING, TENSION**
209	**3-650-512-00**	**COLLAR, (A)**
210	**3-651-572-00**	**SPRING, COMPRESSION**
211	3-668-048-11	SPACER (DIA. 4x20)
212	**3-668-772-00**	**SHAFT, IDLER PULLEY**
213	3-668-781-00	JOINT, T
214	3-668-782-00	JOINT, S
215	**3-668-785-00**	**BELT (67x2)**
216	3-668-786-00	HOLDER, LED
217	**3-668-826-00**	**RETAINER, PIN, SOLENOID**
218	3-668-828-00	BRACKET, PS
219	**3-703-074-00**	**CAP 3, SHAFT**

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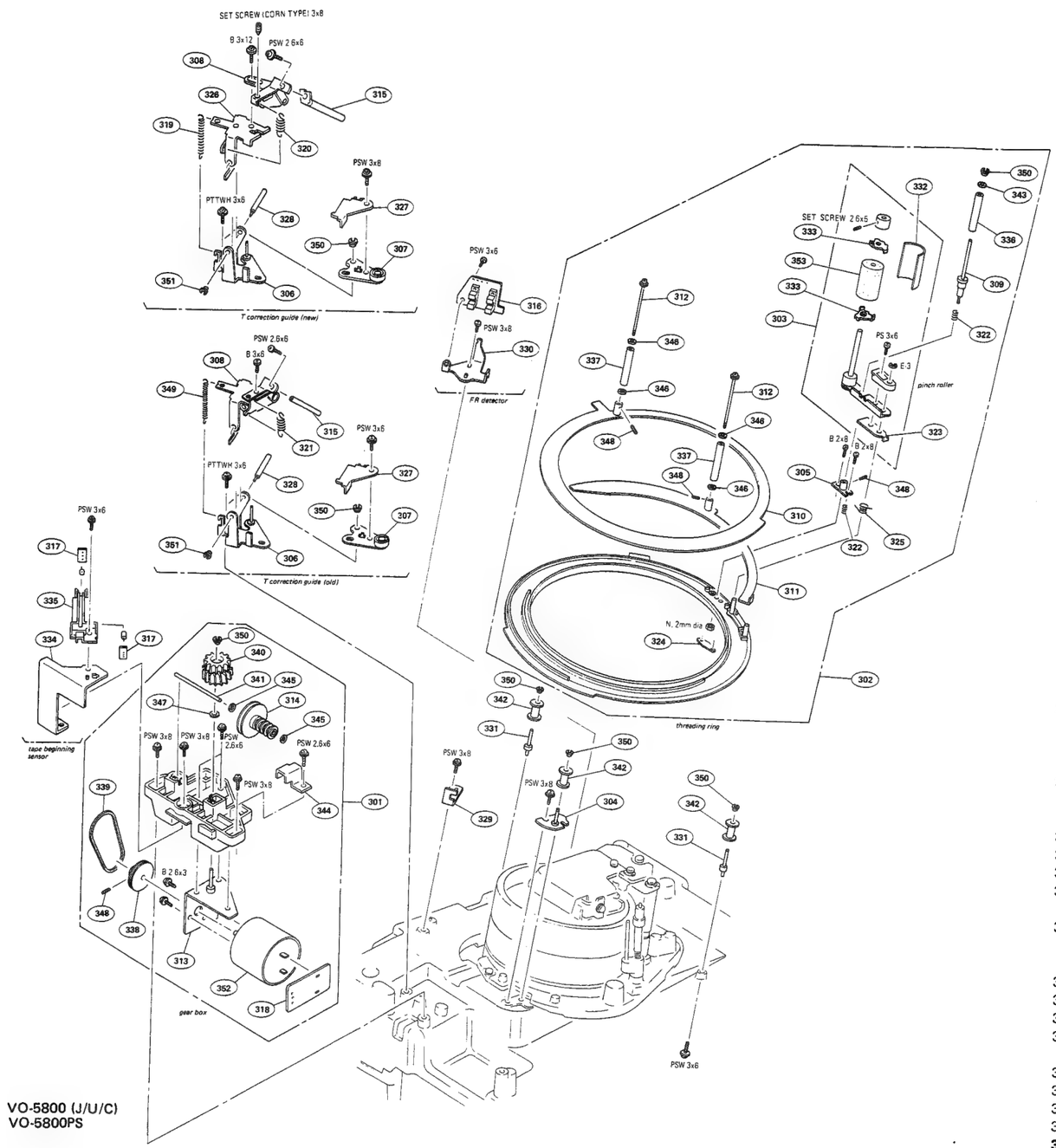
Tape Threading Block



VO-5800 (J/U/C)
VO-5800PS

No.	Parts No.	Description
301	A-6750-120-A	BOX BLOCK ASS'Y, GEAR
302	A-6750-124-D	RING BLOCK ASS'Y, MAIN
303	**A-6750-125-D**	**PINCH ROLLER BLOCK ASS'Y**
304	X-3668-719-0	ROLLER ASS'Y, RING
305	X-3668-720-0	BASE ASS'Y, ROLLER, PRECEDING
306	X-3668-721-0	CHASSIS ASS'Y, GUIDE
307	**X-3668-722-0**	**LOCK ASS'Y, FR**
308	X-3668-723-0	ARM ASS'Y, GUIDE, T CORRECTION AEP: UP TO S/N 10850 UK: UP TO S/N 10350
	X-3668-723-2	ARM ASS'Y, GUIDE, T CORRECTION AEP: S/N 10851 AND LATER UK: S/N 10351 AND LATER
309	**X-3668-724-0**	**SHAFT ASS'Y, ROLLER PRECEDING** **AEP: UP TO S/N 11150** **UK: UP TO S/N 10350**
	X-3668-724-3	**SHAFT ASS'Y, ROLLER PRECEDING** **AEP: S/N 11151 AND LATER** **UK: S/N 10351 AND LATER**
310	X-3668-731-0	RING (UPPER) ASS'Y, SUB
311	X-3668-732-0	RING (LOWER) ASS'Y, SUB
312	**X-3668-733-0**	**SHAFT ASS'Y, SR GUIDE**
313	X-3668-742-0	BRACKET ASS'Y, MOTOR
314	**X-3668-743-0**	**PULLEY ASS'Y, WORM**
315	**X-3668-756-0**	**SHAFT ASS'Y, T CORRECTION GUIDE** **AEP: UP TO S/N 10850** **UK: UP TO S/N 10350**
	X-3668-756-3	**SHAFT ASS'Y, T CORRECTION GUIDE** **AEP: S/N 10851 AND LATER** **UK: S/N 10351 AND LATER**
316	1-603-585-00	PRINTED CIRCUIT BOARD, FR-11
317	1-603-737-00	PRINTED CIRCUIT BOARD, PH-5
318	1-603-767-00	PRINTED CIRCUIT BOARD, LM-7
319	**3-143-067-00**	**SPRING, TENSION** **AEP: S/N 10851 AND LATER** **UK: S/N 10351 AND LATER**
320	**3-437-289-00**	**SPRING, TENSION** **AEP: S/N 10851 AND HIGHER** **UK: S/N 10351 AND HIGHER**
321	**3-472-327-00**	**SPRING, TENSION** **AEP: UP TO S/N 10850** **UK: UP TO S/N 10350**
322	**3-634-196-00**	**SPRING**
323	**3-642-558-00**	**ARM (C), PINCH ROLLER**
324	3-668-743-00	NUT, PLATE, ROLLER, PRECEDING
325	**3-668-745-00**	**SPRING**
326	3-668-749-02	ARM (A), GUIDE, T CORRECTION AEP: S/N 10851 AND LATER UK: S/N 10351 AND LATER
327	3-668-753-00	PLATE, ADJUSTMENT, FR LOCKER
328	3-668-754-00	SHAFT, GUIDE ARM, T CORRECTION
329	3-668-755-00	PLATE, STOPPER, SR
330	3-668-756-02	BRACKET, DETECTION, FR
331	3-668-757-00	SHAFT (A), RING ROLLER
332	3-668-888-00	COVER, PINCH
333	3-668-889-00	CAP, PINCH ROLLER
334	3-668-900-00	BRACKET, T SENSOR
335	**3-668-901-00**	**HOLDER, T PHOTO**

No.	Parts No.	Description
336	**3-668-917-00**	**ROLLER, PRECEDING**
337	**3-668-919-00**	**ROLLER, SR GUIDE**
338	**3-668-945-00**	**PULLEY, LM**
339	**3-668-946-00**	**BELT (38.5x1.8), SQUARE**
340	**3-668-947-00**	**PINION, L**
341	3-668-948-00	SHAFT, WORM
342	**3-668-963-00**	**ROLLER, RING**
343	**3-669-926-01**	**WASHER (3), THRUST**
344	3-669-960-00	RETAINER, SHAFT
345	**3-701-437-21**	**WASHER, POLY 2MM DIA., 0.5T**
346	**3-701-438-11**	**WASHER, POLY 2.5MM DIA., 0.25T**
347	**3-701-439-21**	**WASHER, POLY 3MM DIA., 0.5T**
348	**3-701-505-00**	**SET SCREW, DOUBLE POINT 3x3**
349	**3-701-788-XX**	**SPRING TENSION (23T)** **AEP: UP TO S/N 10850** **UK: UP TO S/N 10350**
350	**3-703-074-00**	**CAP 3, SHAFT**
351	**3-703-075-00**	**CAP 2, SHAFT**
352	**8-835-056-01**	**MOTOR, DC (DNR-1002A)**
353	**X-3668-758-3**	**PINCH ROLLER ASS'Y**

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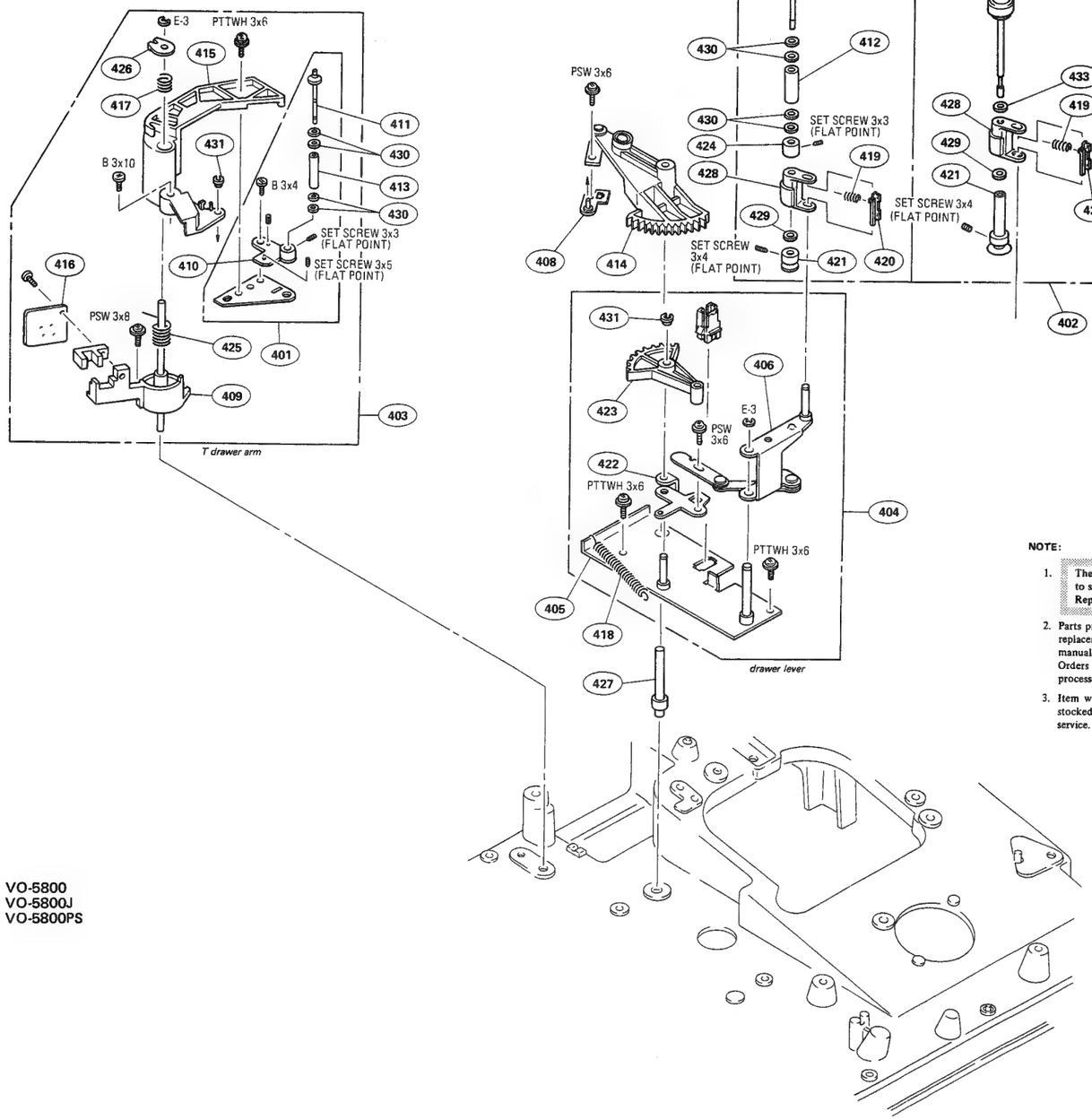
Supply and Take-up Threading Arms



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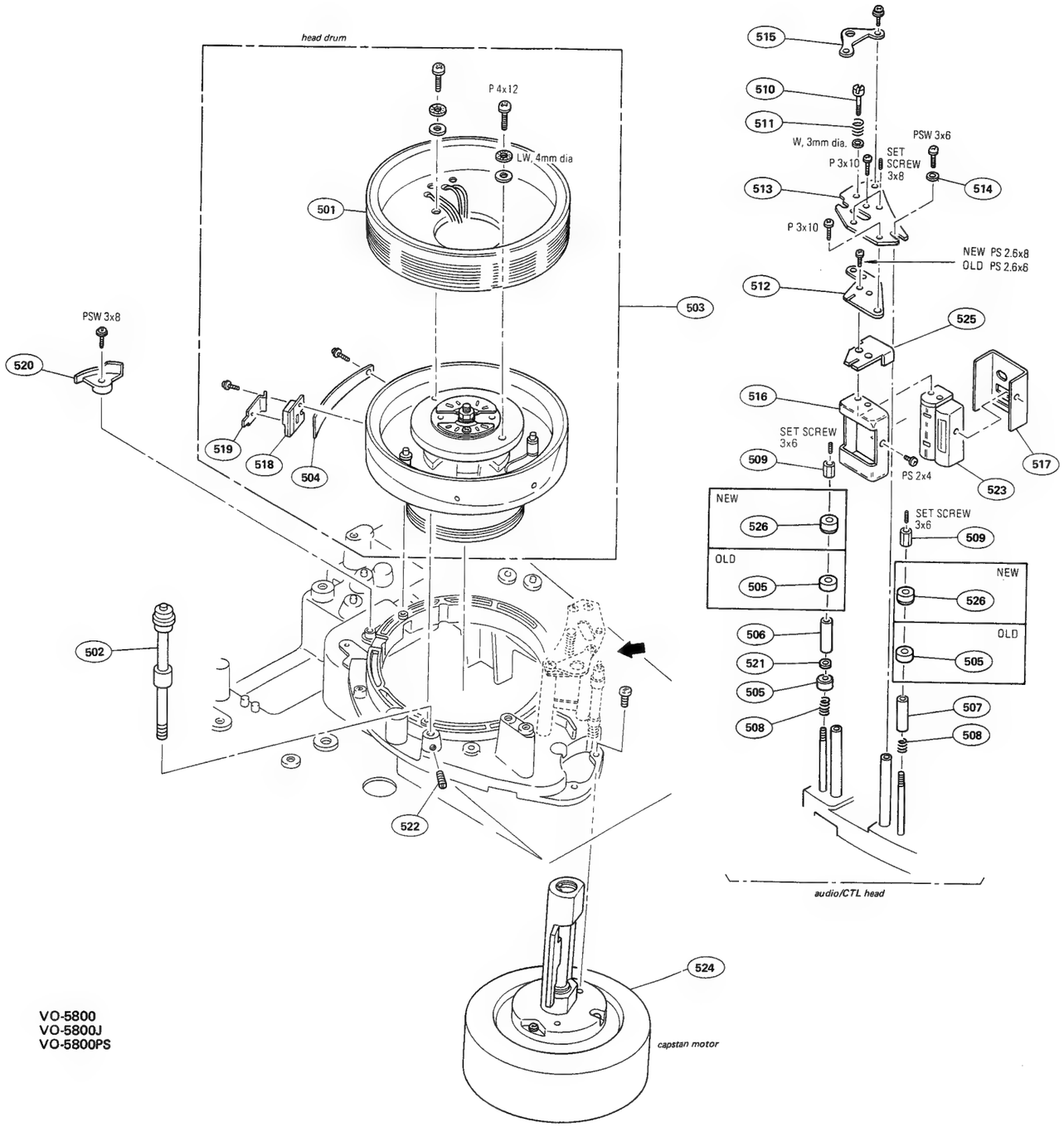
No.	Parts No.	Description
401	**A-6746-020-A**	**ROLLER BLOCK ASS'Y, T GUIDE**
402	**A-6746-021-B**	**ROLLER BLOCK ASS'Y, S DRAWER** (AEP .... S/N UP TO 11150 / UK .... S/N UP TO 10350)
	A-6746-026-A	**ROLLER BLOCK ASS'Y, S DRAWER** (AEP .... S/N 11151 AND HIGHER / UK .... S/N 10351 AND HIGHER)
403	A-6750-121-A	ARM BLOCK ASS'Y, T DRAWER
404	A-6750-122-A	ARM BLOCK ASS'Y, S DRAWER
405	X-3668-710-0	BASE ASS'Y, ARM, S DRAWER
406	X-3668-711-0	ARM ASS'Y, S DRAWER
407	**X-3668-712-0**	**SHAFT (2) ASS'Y, ROLLER** (AEP .... S/N UP TO 11150 / UK .... S/N UP TO 10350)
408	X-3668-713-0	LINK (B) ASS'Y, DRIVING
409	X-3668-714-0	RETAINER ASS'Y, ARM, T DRAWER
410	X-3668-715-0	PLATE ASS'Y, GUIDE, T
411	**X-3668-716-0**	**SHAFT (3) ASS'Y, ROLLER**
412	**X-3668-718-0**	**GUIDE ASS'Y, TAPE** (AEP .... S/N UP TO 11150 / UK .... S/N UP TO 10350)
413	X-3668-727-0	GUIDE ASS'Y, TAPE
414	**X-3668-729-0**	**LEVER ASS'Y, DRAWER**
415	X-3668-741-0	ARM ASS'Y, T DRAWER
416	1-603-435-00	PRINTED CIRCUIT BOARD, SW-50
417	**3-534-854-00**	**SPRING, COMPRESSION**
418	**3-540-506-00**	**SPRING, TENSION**
419	**3-644-718-00**	**SPRING, COMPRESSION**
420	**3-668-718-00**	**RETAINER, SPRING, S DRAWER**
421	**3-668-719-00**	**HOLDER (L), S GUIDE** (AEP .... S/N UP TO 11150 / UK .... S/N UP TO 10350)
	3-669-974-00	**HOLDER (L), S GUIDE** (AEP .... S/N 11151 AND HIGHER / UK .... S/N 10351 AND HIGHER)
422	3-668-720-00	LIMITER, S DRAWER
423	**3-668-721-00**	**ARM, S DRIVING**
424	3-668-724-00	FLANGE (2), LOWER (AEP .... S/N UP TO 11150 / UK .... S/N UP TO 10350)
425	3-668-734-00	SPRING
426	**3-668-735-00**	**RETAINER, SPRING**
427	3-668-760-00	SHAFT, DRAWER LEVER
428	**3-668-833-00**	**HOLDER (M), GUIDE, S**
430	**3-701-438-01**	**WASHER, POLY 2.5MM DIA., 0.13T**
431	**3-703-074-00**	**CAP 3, SHAFT**
432	**A-6746-025-A**	**ROLLER BLOCK ASS'Y (1), S DRAWER** (AEP .... S/N 11151 AND HIGHER / UK .... S/N 10351 AND HIGHER)
433	**7-688-001-11**	**W2, MIDDLE** (AEP .... S/N 11151 AND HIGHER / UK .... S/N 10551 AND HIGHER)

VO-5800
VO-5800J
VO-5800PS

Drum Block and Capstan



VO-5800
VO-5800J
VO-5800PS

No.	Parts No.	Description
501	**A-6709-400-A**	**UPPER DRUM ASS'Y, DUR-23-R**
502	**A-6709-382-A**	**GUIDE BLOCK ASS'Y, TAPE**
503	**A-6709-392-A**	**HEAD DRUM ASS'Y, DUH-23A-R**
504	**1-586-633-00**	**DETECTOR, DEW**
505	**3-641-612-00**	**GUIDE, TAPE**
506	**3-641-613-00**	**GUIDE, TAPE**
507	**3-641-614-00**	**GUIDE, TAPE**
508	**3-641-615-00**	**SPRING, COMPRESSION**
509	**3-641-616-00**	**NUT, TAPE GUIDE ADJUSTMENT**
510	3-641-621-00	SCREW, HEAD ADJUSTING
511	**3-641-622-00**	**SPRING, COMPRESSION**
512	3-641-640-00	BRACKET, (1) C.T.L. HEAD
513	3-641-641-02	BRACKET, (2) C.T.L. HEAD
514	3-645-076-00	WASHER, M-REEL S
515	3-647-815-00	PLATE, ADJUSTMENT, CTL HEAD
516	3-650-301-02	COVER, HEAD, D-CTL
517	3-650-302-00	COVER, HEAD, (REAR)
518	3-656-501-00	HOLDER, TERMINAL
519	3-656-502-00	PLATE, TERMINAL
520	3-668-999-00	CAM, PROTECTION
521	**3-669-952-00**	**WASHER, TAPE GUIDE**
522	**3-701-508-00**	**SET SCREW, DOUBLE POINT 3x6**
523	**8-829-358-31**	**HEAD, CTL (EPP150-5803B)**
524	**8-838-019-01**	**MOTOR, DC (BHF-1600A)**
525	3-669-985-00	PLATE, ADJUSTMENT (AEP .... S/N 12951 AND HIGHER) (UK .... S/N 10751 AND HIGHER)
526	3-688-807-01	FLANGE, TAPE GUIDE (AEP .... S/N 15901 AND HIGHER) (UK .... S/N 11401 AND HIGHER)

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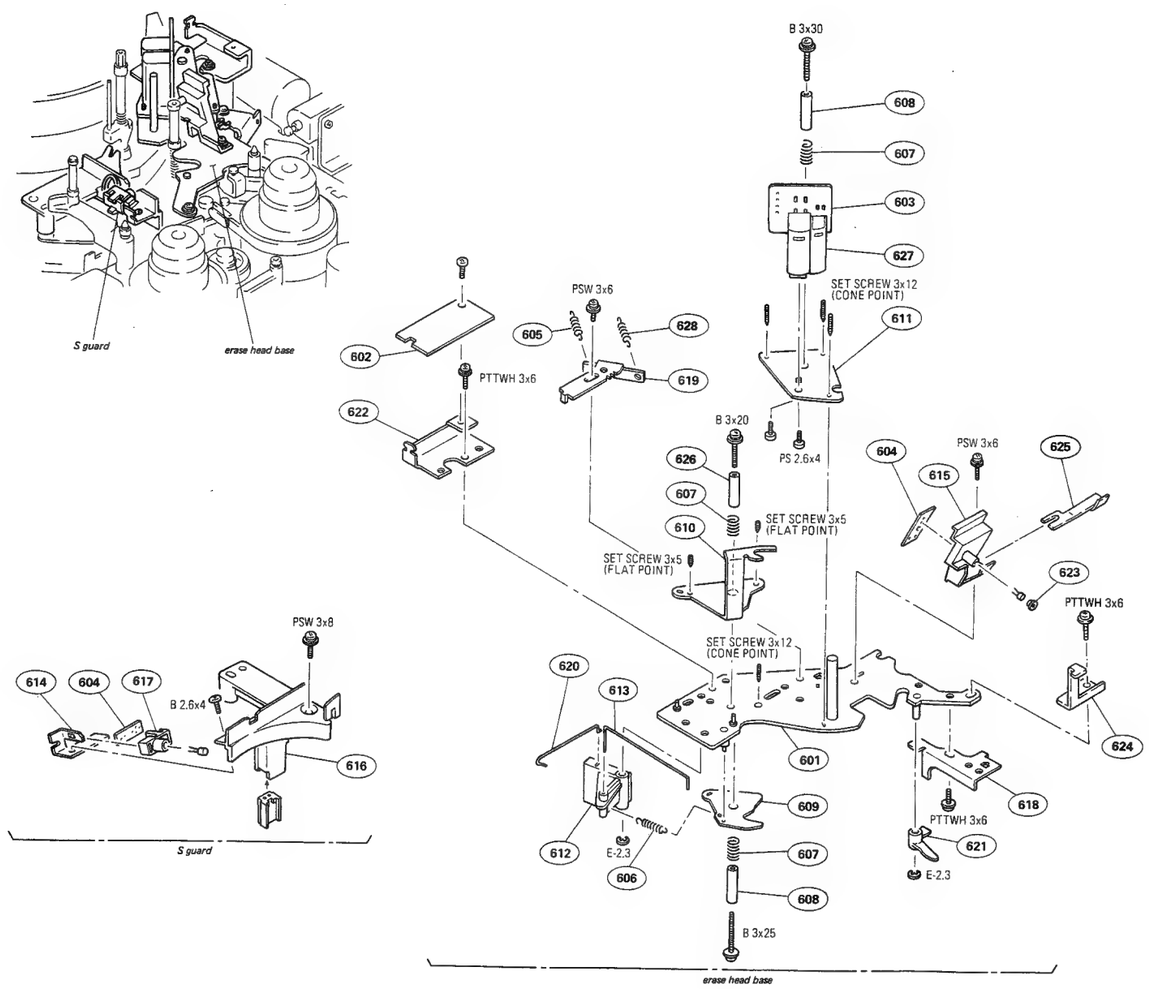
Erase Head Base and S Guard



VO-5800
VO-5800J
VO-5800PS

No.	Parts No.	Description
601	X-3668-728-0	DECK ASS'Y, E HEAD
602	1-586-192-00	PRINTED CIRCUIT BOARD, AH-3
603	1-603-729-00	PRINTED CIRCUIT BOARD, EC-19
604	1-603-737-00	PRINTED CIRCUIT BOARD, PH-5
605	**3-534-238-XX**	**SPRING, TENSION (23T)** (AEP . . . . S/N UP TO 11150 / UK . . . . S/N UP TO 10350)
	3-535-558-00	**SPRING, TENSION** (AEP . . . . S/N 11151 ~ 11450 / UK . . . . S/N 10351 ~ 10650)
	3-538-102-00	**SPRING, TENSION** (AEP . . . . S/N 11451 AND HIGHER / UK . . . . S/N 10651 AND HIGHER)
606	**3-630-615-XX**	**SPRING, TENSION (18T)**
607	**3-637-335-00**	**SPRING, COMPRESSION (C)**
608	3-657-086-00	SPACER (3-20)
609	**3-668-705-00**	**HOLDER (LOWER), S**
610	**3-668-706-00**	**HOLDER (UPPER), S**
611	3-668-707-00	TABLE, HEAD, E
612	3-668-708-00	ARM, DRIVING, CORRECTION GUIDE
613	**3-668-709-00**	**ROD, PULL, CORRECTION GUIDE**
614	3-668-809-00	BRACKET, HOLDER AEP: UP TO S/N 11150 UK: UP TO S/N 10350
	3-668-809-02	BRACKET, HOLDER AEP: S/N 11151 AND LATER UK: S/N 10351 AND LATER
615	3-668-832-00	HOLDER (S) AEP: UP TO S/N 11150 UK: UP TO S/N 10350
	3-668-832-02	HOLDER (S) AEP: S/N 11151 AND LATER UK: S/N 10351 AND LATER
616	**3-668-836-00**	**GUARD, S** **AEP: UP TO S/N 11150** **UK: UP TO S/N 10350**
	3-668-836-02	**GUARD, S** **AEP: S/N 11151 AND LATER** **UK: S/N 10351 AND LATER**
617	3-668-837-00	HOLDER, LED
618	3-668-859-00	STOPPER, RING
619	3-668-860-00	HOOK, SPRING, TENSION REGULATOR
620	3-668-884-03	JOINT, RESERVE PRESS
621	3-668-894-00	LEVER, RELEASE
622	3-668-962-00	BRACKET, AH PC BOARD
623	3-669-920-00	COVER, S PHOTO
624	3-669-963-00	SPRING, LEAF, GROUND
625	3-669-964-00	PLATE, GROUND
626	**4-855-006-11**	**SPACER (DIA. 3)**
627	**8-825-513-20**	**HEAD, CTL ERASE (EPP170-58)**
628	**3-534-238-XX**	**SPRING, TENSION (23T)**

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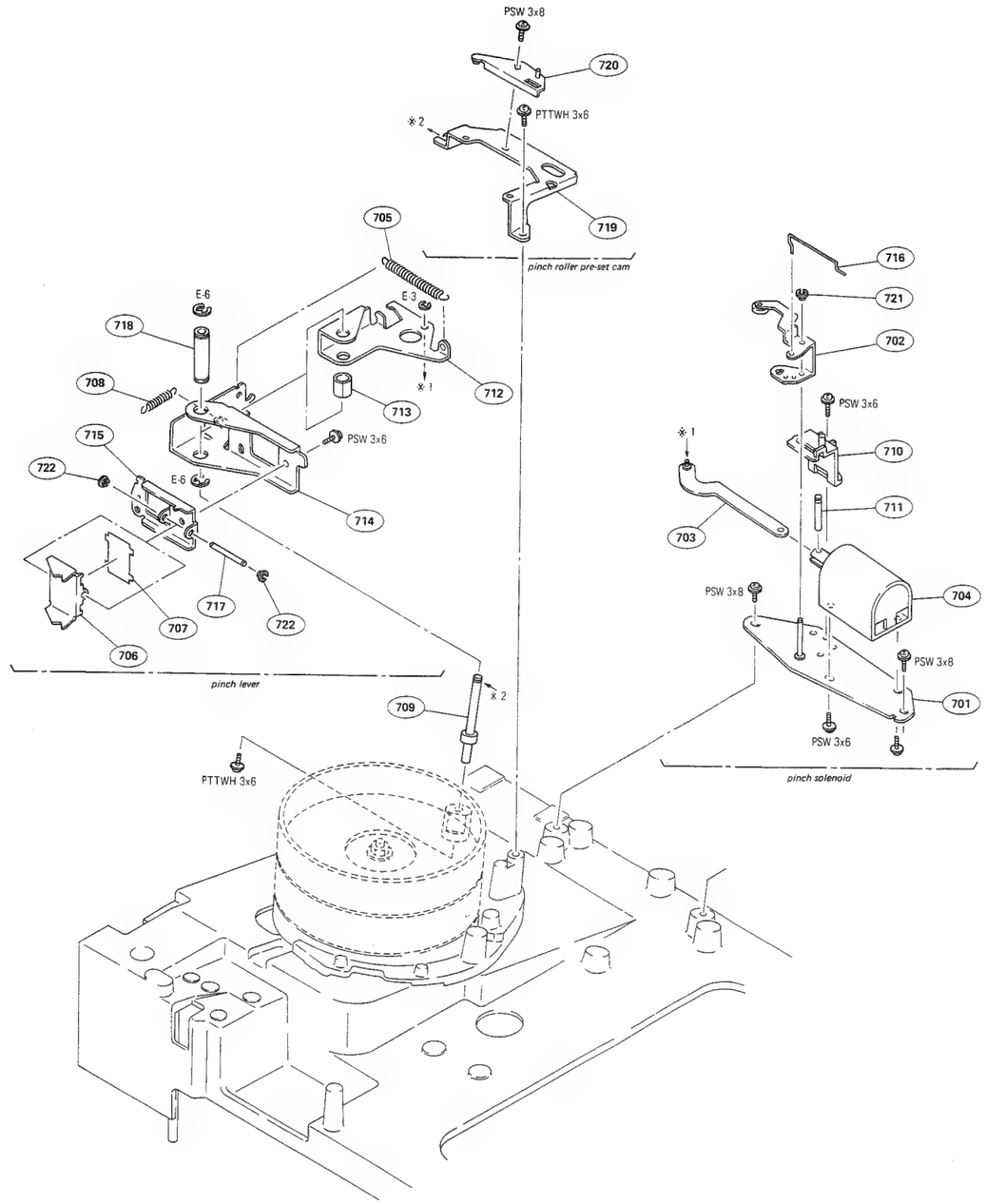
Pinch Lever and Pinch Solenoid



No.	Parts No.	Description
701	X-3668-734-0	BASE ASS'Y, PINCH PRESS
702	**X-3668-735-3**	**LEVER ASS'Y, RESERVE PRESS**
703	X-3668-736-0	JOINT ASS'Y
704	**1-454-286-00**	**SOLENOID**
705	**3-610-265-02**	**SPRING**
706	3-642-518-00	LEVER, PINCH
707	3-642-519-00	SPRING
708	**3-645-392-00**	**SPRING, TENSION**
709	3-668-862-00	SHAFT, PRESS LEVER, PINCH
710	**3-668-863-00**	**GUIDE, ARBOR**
711	**3-668-864-00**	**PIN, SOLENOID**
712	3-668-865-00	LEVER (B), PINCH PRESS
713	3-668-867-00	SPACER (8X9)
714	3-668-868-00	LEVER (A), PINCH PRESS
715	3-668-883-00	PLATE, ADJUSTMENT, PINCH PRESS
716	3-668-884-03	JOINT, RESERVE PRESS
717	3-668-895-00	SHAFT
718	3-668-896-00	SLEEVE, PRESS LEVER, PINCH
719	3-668-997-00	DECK, P SUB PRESS
720	3-668-998-00	CAM, SUB PRESS
721	**3-703-074-00**	**CAP 3, SHAFT**
722	**3-703-075-00**	**CAP 2, SHAFT**

NOTE:

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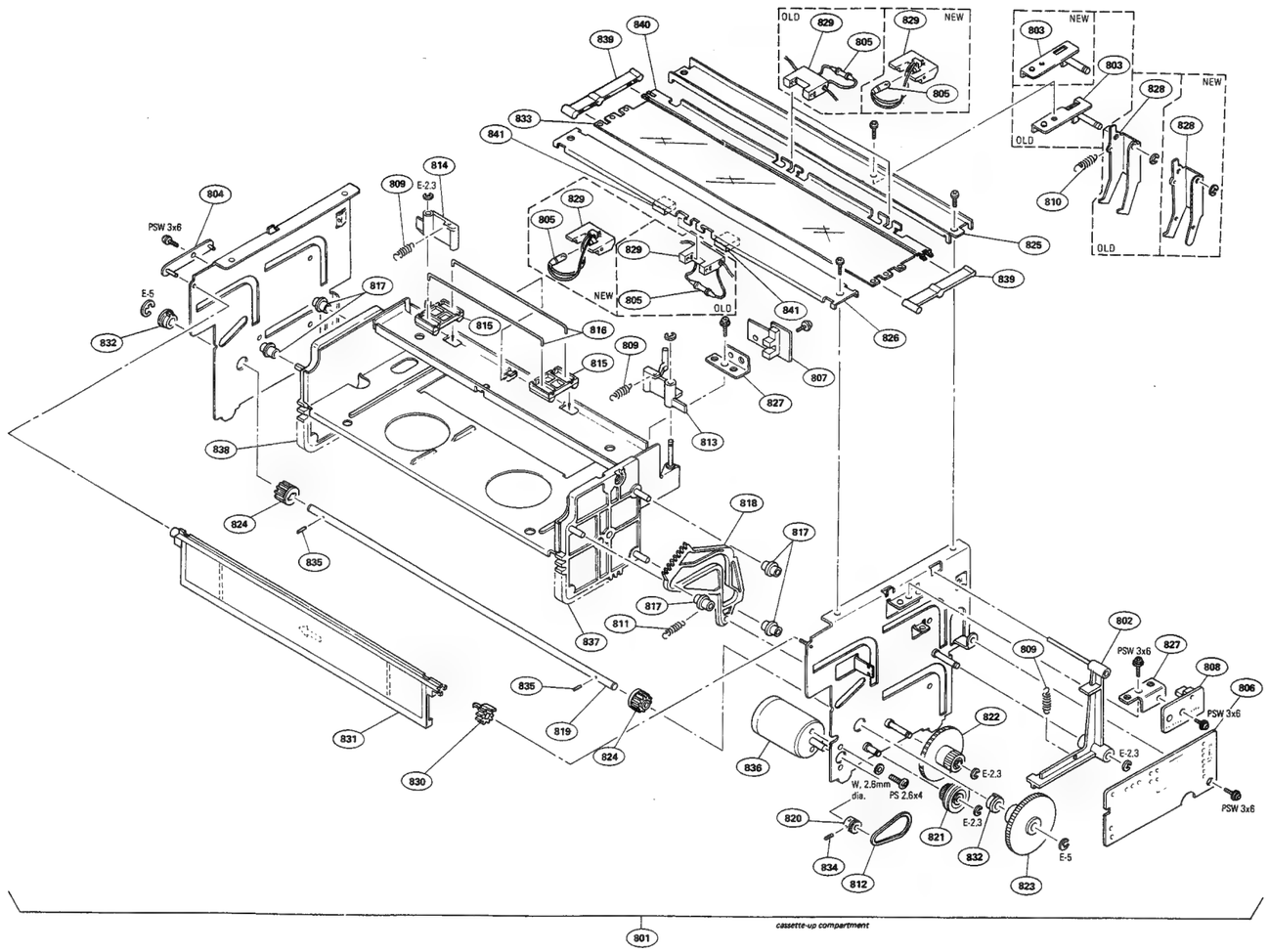
Cassette-up Compartment



VO-5800 (J/U/C)
VO-5800PS
VO-5630 (U/C)

No.	Parts No.	Description
801	**A-6751-104-C**	**CASSETTE-UP ASS'Y**
802	**X-3668-059-0**	**ARM ASS'Y, SWITCH, DOWN**
803	X-3668-060-0	HOLDER ASS'Y, ARM
		AEP: UP TO S/N 10850
		UK: UP TO S/N 10350
	X-3668-060-3	HOLDER,ASS'Y, ARM
		AEP: S/N 10851 AND LATER
		UK: S/N 10351 AND LATER
804	X-3668-061-0	SUPPORT ASS'Y, LID
805	**1-518-455-00**	**LAMP, PILOT**
		AEP: UP TO S/N 10850
		UK: UP TO S/N 10350
	1-518-508-00	**LAMP, PILOT**
		AEP: S/N 10851 AND LATER
		UK: S/N 10351 AND LATER
806	1-604-429-00	PRINTED CIRCUIT BOARD, CC-9
807	1-604-430-00	PRINTED CIRCUIT BOARD, CC-10
808	1-604-431-00	PRINTED CIRCUIT BOARD, CC-11
809	**3-507-051-00**	**SPRING, TENSION**
810	**3-534-217-00**	**SPRING, TENSION**
811	**3-536-780-00**	**SPRING, TENSION**
812	**3-653-387-00**	**BELT, LM**
813	3-668-295-00	LEVER (RIGHT), CASSETTE PUSH-OUT
814	3-668-296-00	LEVER (LEFT), CASSETTE PUSH-OUT
815	**3-668-297-00**	**RETAINER, CASSETTE**
816	3-668-298-00	SPRING
817	**3-668-299-00**	**ROLLER, GUIDE**
818	3-668-300-00	CAM, LID OPEN
819	3-668-301-00	SHAFT, DRIVING
820	**3-668-302-00**	**PULLEY, MOTOR**
821	**3-668-303-00**	**GEAR (A)**
822	**3-668-304-00**	**GEAR (B)**
823	**3-668-305-00**	**GEAR (C)**
824	**3-668-306-00**	**GEAR (D)**
825	3-668-307-00	JOINT (R), LEFT & RIGHT
		AEP: UP TO S/N 10850
		UK: UP TO S/N 10350
	3-668-307-02	JOINT (R), LEFT & RIGHT
		AEP: S/N 10851 AND LATER
		UK: S/N 10351 AND LATER
826	3-668-308-00	JOINT (F), LEFT & RIGHT
		AEP: UP TO S/N 10850
		UK: UP TO S/N 10350
	3-668-308-03	JOINT (F), LEFT & RIGHT
		AEP: S/N 10851 AND LATER
		UK: S/N 10351 AND LATER
827	3-668-309-00	BRACKET, SWITCH
828	3-668-310-00	ARM, LID OPEN
		AEP: UP TO S/N 10850
		UK: UP TO S/N 10350
	3-668-310-02	ARM, LID OPEN
		AEP: S/N 10851 AND LATER
		UK: S/N 10351 AND LATER
829	**3-668-314-00**	**HOLDER, LAMP**
		AEP: UP TO S/N 10850
		UK: UP TO S/N 10350
	3-668-314-02	**HOLDER, LAMP**
		AEP: S/N 10851 AND LATER
		UK: S/N 10351 AND LATER
830	**3-668-315-02**	**GEAR, LID**
831	**3-668-371-00**	**LID, CASSETTE**
832	**3-668-474-00**	**BEARING (6)**
833	**3-672-604-11**	**REFLECTOR**
834	**3-701-506-01**	**SET SCREW, DOUBLE POINT 3X4**
835	3-703-358-00	PIN, PARALLEL (DIA. 2X8)
836	**8-835-055-01**	**MOTOR, DC (DNR-4700A)**
837	**X-3668-057-0**	**CASECON ASS'Y, RACK (RIGHT)**
838	**X-3668-058-0**	**CASECON ASS'Y, RACK (LEFT)**
839	**3-668-313-02**	**FRAME, SUPPORT, REFLECTOR**
840	**3-672-639-03**	**BRACKET, LAMP**
841	3-672-926-00	CUSHION, LID
		(AEP .... S/N 10251 AND HIGHER)
		(UK .... S/N 10051 AND HIGHER)

NOTE:

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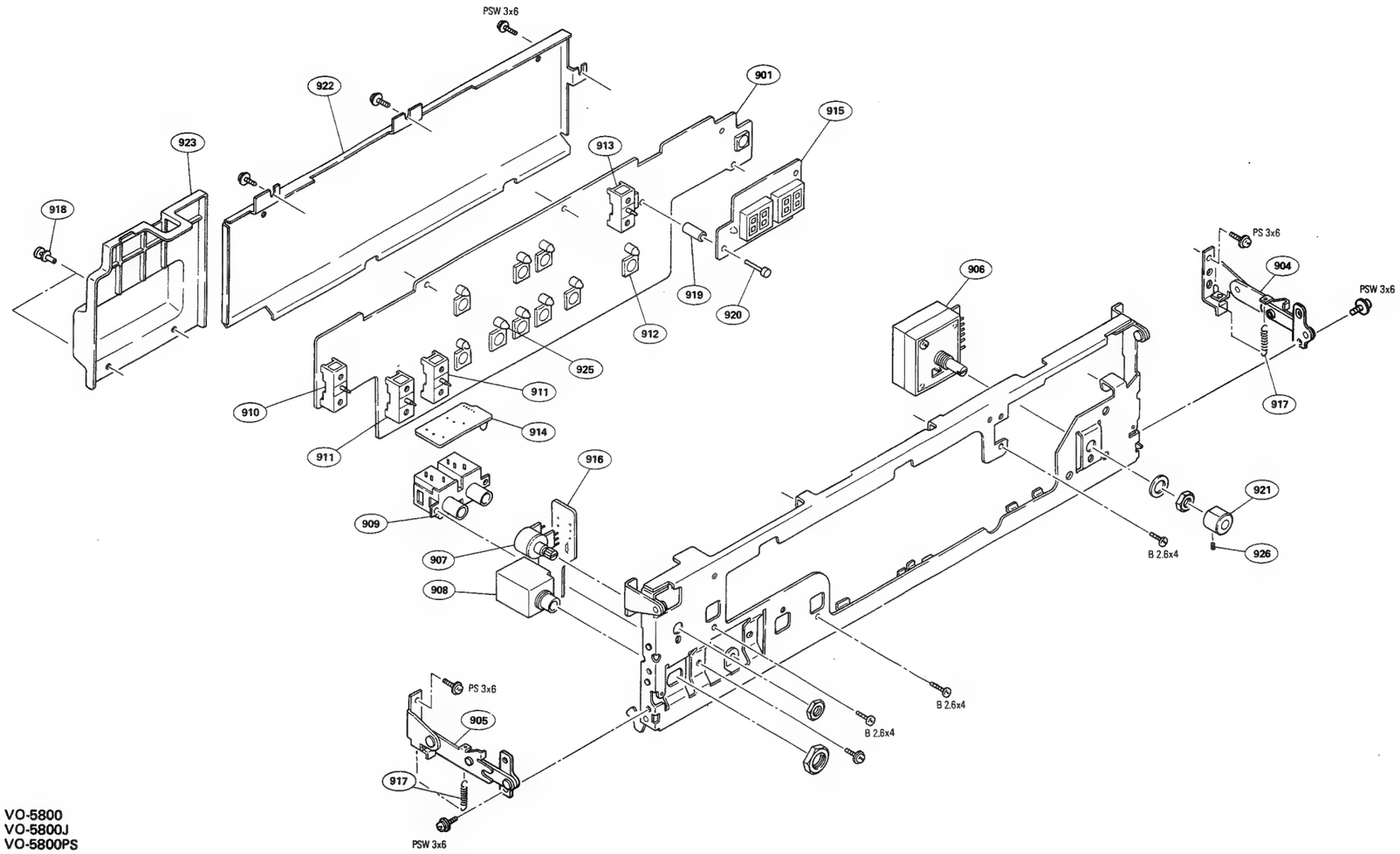
Function Control



VO-5800
VO-5800J
VO-5800PS

No.	Parts No.	Description
901	A-6728-293-A	MOUNTED CIRCUIT BOARD, KY-13B
904	X-3668-766-0	STAY (RIGHT) ASS'Y, LOCK
905	X-3668-765-0	STAY (LEFT) ASS'Y, LOCK
906	**1-226-996-21**	**ENCODER, ROTARY**
907	**1-228-218-00**	**RES, VAR, CARBON 500/500**
908	**1-507-553-00**	**JACK**
909	**1-507-733-00**	**JACK (LARGE TYPE)**
910	**1-516-963-00**	**SWITCH, LEVER SLIDE**
911	**1-516-995-00**	**SWITCH, LEVER SLIDE**
912	**1-552-539-00**	**SWITCH, KEY BOARD**
913	**1-553-003-00**	**SWITCH, LEVER SLIDE**
914	1-603-732-00	PRINTED CIRCUIT BOARD, MI-3
915	1-603-733-00	PRINTED CIRCUIT BOARD, DP-10
916	1-603-734-00	PRINTED CIRCUIT BOARD, HP-3
917	3-437-288-00	SPRING, TENSION
918	**3-531-576-11**	**RIVET**
919	**3-659-487-00**	**HOLDER, BUZZER**
920	**3-659-488-00**	**PIN, BUZZER HOLDER**
921	**3-668-930-00**	**BOSS, FITTING, KNOB**
922	3-668-933-00	PLATE, BOTTOM, KEY BOARD
923	3-668-934-00	COVER, MICROPHONE JACK
925	**3-669-905-00**	**HOLDER, LAMP**
926	**3-701-505-00**	**SET SCREW, DOUBLE POINT 3x3**

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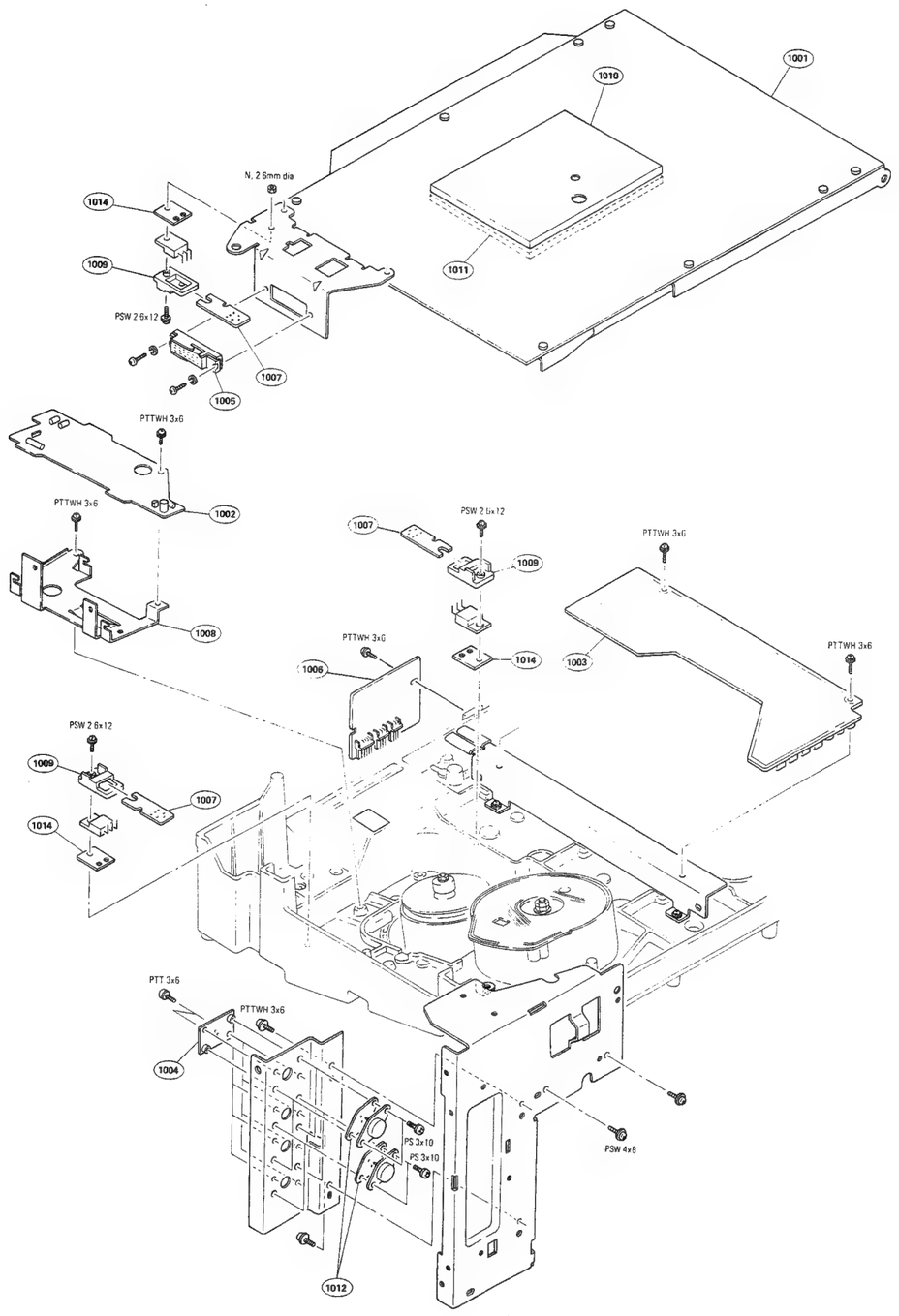
Chassis (bottom view)



No.	Parts No.	Description
⚠1001	A-6717-229-D	MOUNTED CIRCUIT BOARD, SY-68C
⚠1002	A-6723-173-A	MOUNTED CIRCUIT BOARD, DC-10E
⚠1003	A-6725-358-A	MOUNTED CIRCUIT BOARD, MR-11
1004	**1-526-654-00**	**SOCKET**
1005	**1-561-583-00**	**RECEPTACLE (FEMALE) 33P**
1006	1-603-588-00	PRINTED CIRCUIT BOARD, ML-1
1007	1-605-018-00	PRINTED CIRCUIT BOARD, PT-9
1008	3-668-898-00	BRACKET, DC-10 PC BOARD
1009	3-669-904-00	HOLDER, PT
1010	3-669-957-00	SHIELD (P), SY
1011	3-669-959-00	SHIELD (M), SY
1012	**3-701-422-02**	**SPACER, MICA**
1014	**3-703-207-11**	**INSULATOR, TO-220**

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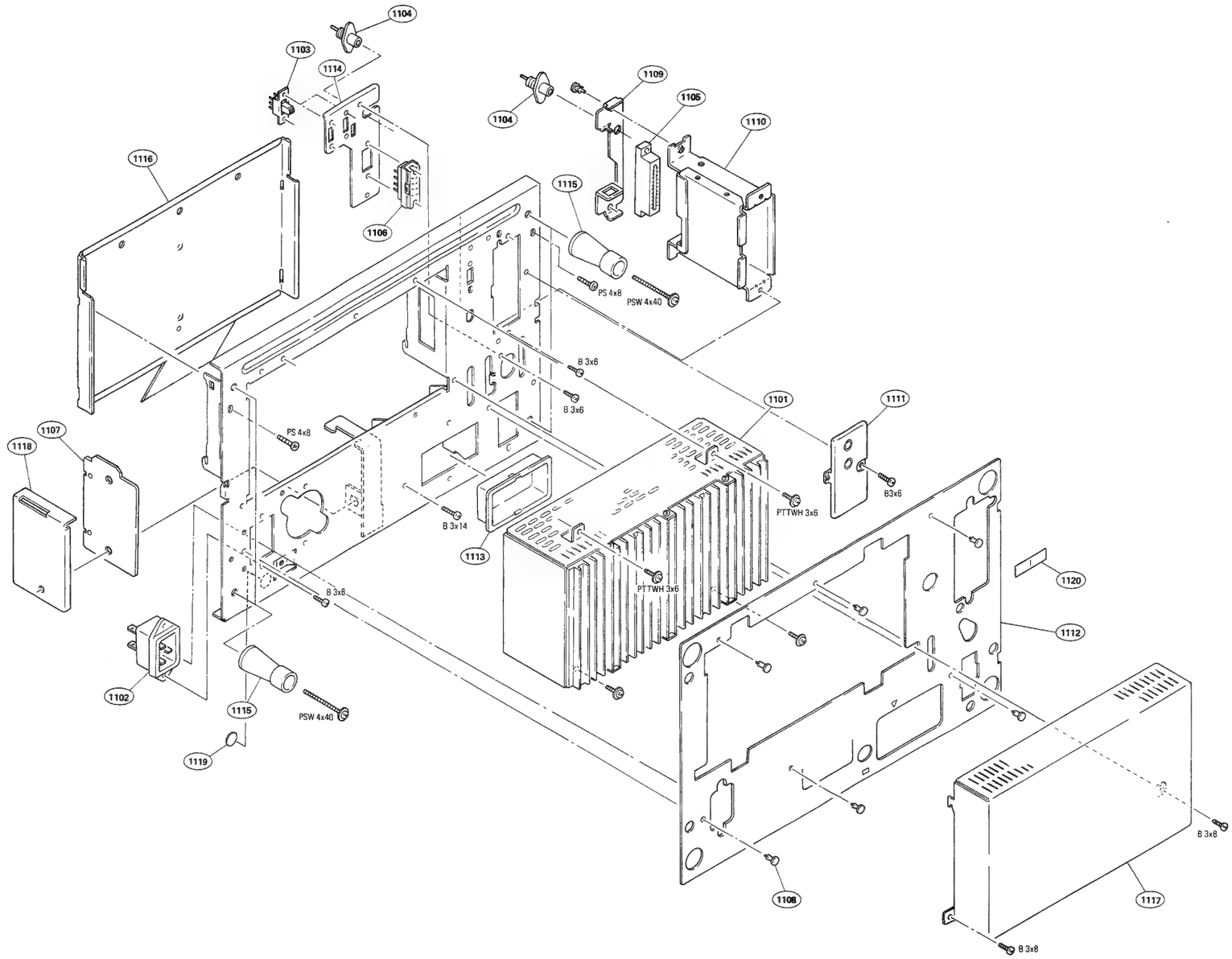
Chassis (rear view)



No.	Parts No.	Description
⚠ 1101	1-413-075-00	**SWITCHING REGULATOR (UR-02)**
⚠ 1102	1-509-546-00	**3P INLET**
1103	**1-516-779-XX**	**SLIDE SWITCH**
1104	**1-555-977-00**	**CONNECTOR ASS'Y, DIN**
1105	**1-560-403-00**	**CONNECTOR, PC BOARD (10P)**
1106	**1-561-671-00**	**SOCKET, MULTI CONNECTOR 8P**
1107	1-603-728-00	PRINTED CIRCUIT BOARD, AC-27
1108	**3-531-576-11**	**RIVET**
1109	3-661-396-00	PLATE (N), CONNECTOR, RF
1110	3-667-805-00	CASE, MD
1111	3-667-811-00	LID, MD
1112	3-667-819-00	PLATE (RC), ORNAMENTAL
1113	3-668-814-00	ESCUTCHEON, CONNECTOR
1114	3-668-842-00	PLATE, CONNECTOR, SUB
1115	**3-668-924-00**	**FOOT, REAR**
1116	X-3668-767-1	SHIELD ASS'Y, SW-REG
1117	3-668-989-00	COVER, SWITCH REGULATOR
1118	3-669-941-00	PROTECTOR (U), AC
1119	3-701-699-00	LABEL, GROUND TERMINAL
1120	3-703-082-31	LABEL, CAUTION (FOR UK)

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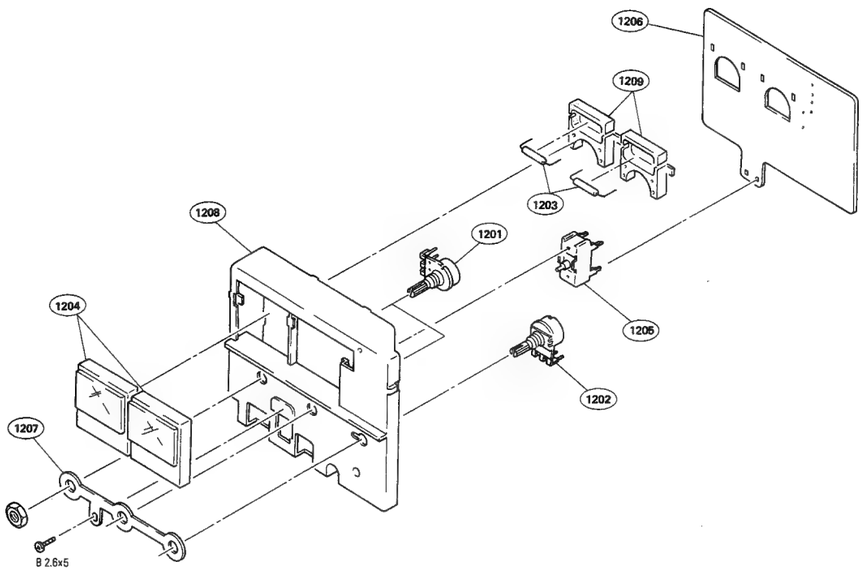
METER PANEL CHASSIS (3)

Meter Panel



No.	Parts No.	Description
1201	**1-226-395-00**	**RES, VAR, CARBON 20K**
1202	**1-226-983-00**	**RES, VAR, CARBON 100K**
1203	**1-518-462-00**	**LAMP, PILOT**
1204	**1-520-393-00**	**METER, AUDIO**
1205	**1-553-003-00**	**SWITCH, LEVER SLIDE**
1206	1-603-735-00	PRINTED CIRCUIT BOARD, MC-14
1207	3-667-801-00	PLATE (R), GROUND
1208	3-667-810-00	PANEL (RECORDER), METER AEP: UP TO S/N 10250 UK: UP TO S/N 10050
	3-667-810-03	PANEL (RECORDER), METER AEP: S/N 10251 AND LATER UK: S/N 10051 AND LATER
1209	**3-668-825-00**	**HOLDER, LAMP**

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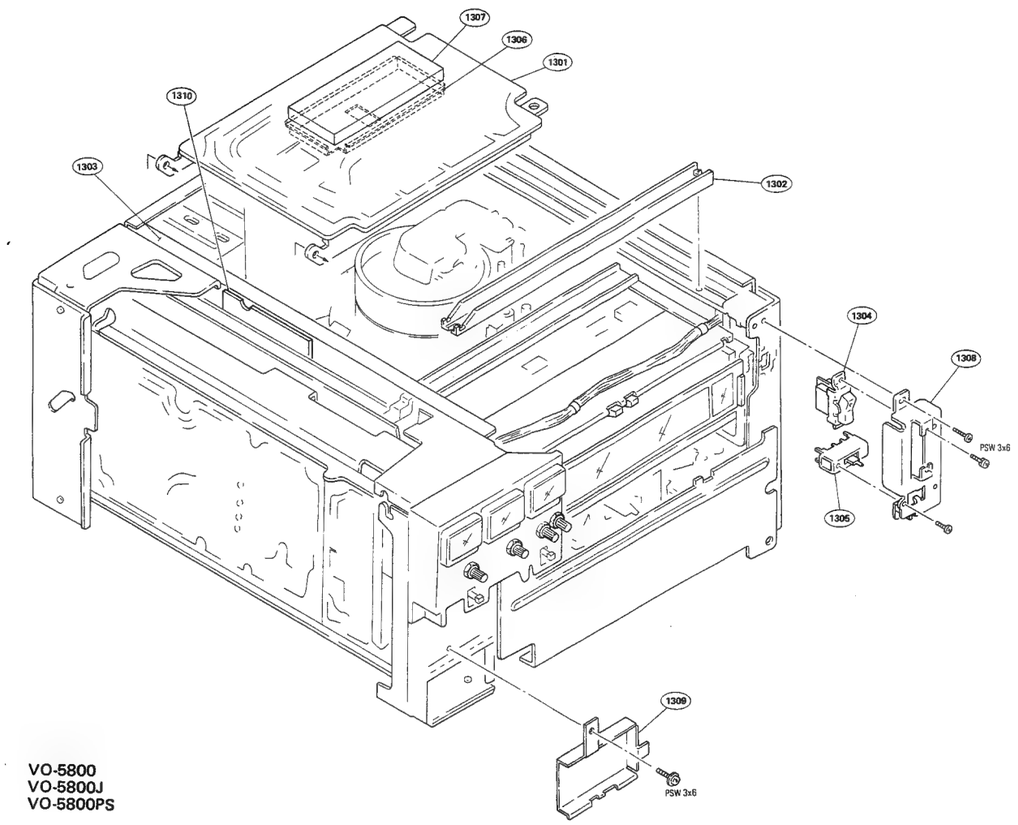
Chassis (top view)



VO-5800
VO-5800J
VO-5800PS

No.	Parts No.	Description
1301	A-6711-297-A	MOUNTED CIRCUIT BOARD, RP-8A
1302	**A-6730-439-A**	**BRACKET ASS'Y**
1303	X-3668-739-3	BEAM ASS'Y, LEFT
⚠1304	**1-553-159-00**	**SWITCH, ROCKER**
1305	**1-553-789-00**	**SWITCH, SLIDE**
1306	3-667-826-02	SHIELD (P), RP-8
1307	3-667-828-00	SHIELD (M), RP-8
1308	3-668-811-00	BRACKET, SWITCH, POWER
1309	3-668-965-00	PLATE, SHIELD
1310	3-667-832-00	SHIELD, SIDE PLATE, LEFT (AEP .... S/N 11151 AND HIGHER) (UK .... S/N 10351 AND HIGHER)

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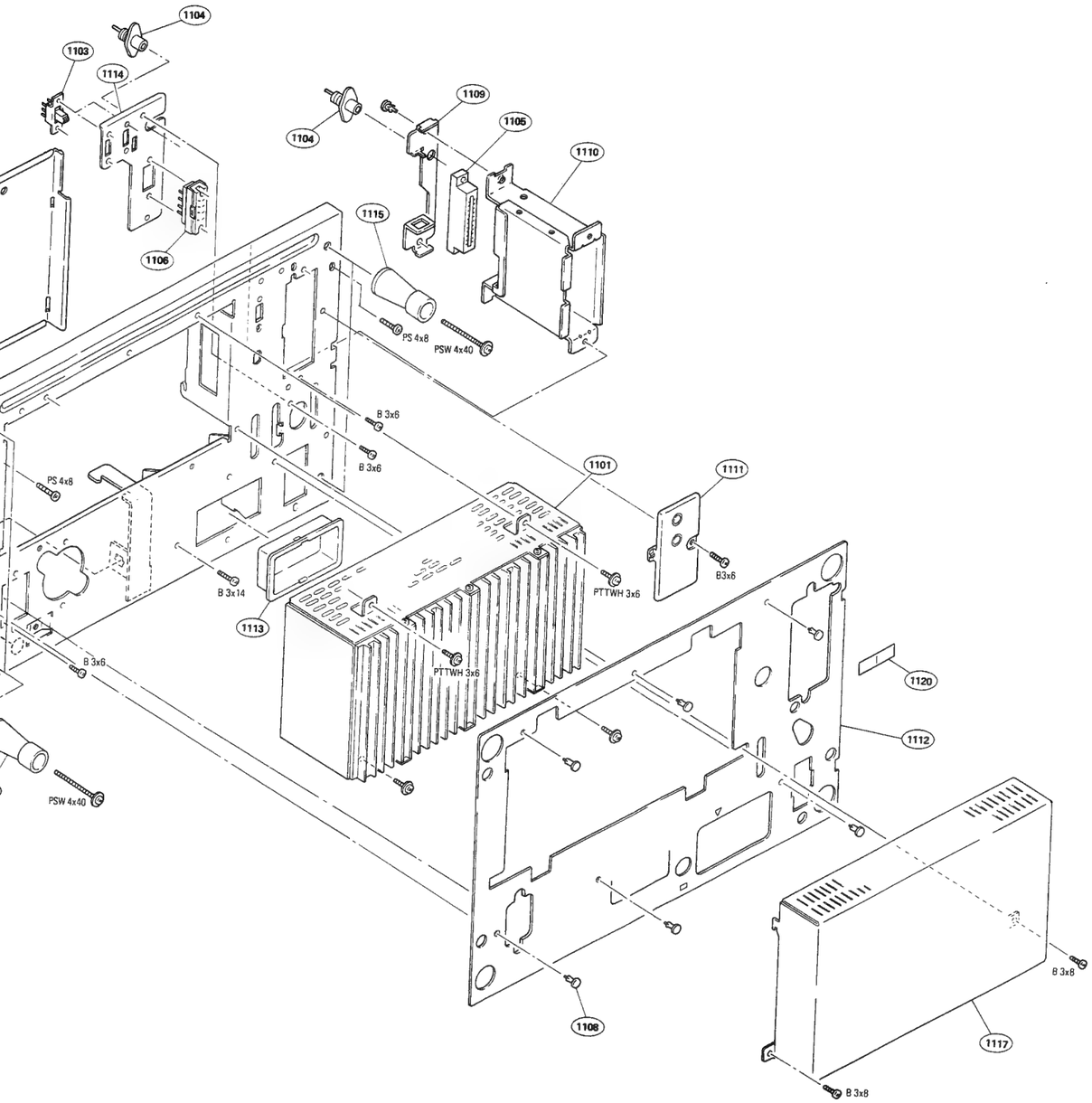
CHASSIS (2)

CHASSIS (2)



No.	Parts No.	Description
⚠1101	1-413-075-00	**SWITCHING REGULATOR (UR-02)**
⚠1102	1-509-546-00	**3P INLET**
1103	**1-516-779-XX**	**SLIDE SWITCH**
1104	**1-555-977-00**	**CONNECTOR ASS'Y, DIN**
1105	**1-560-403-00**	**CONNECTOR, PC BOARD (10P)**
1106	**1-561-671-00**	**SOCKET, MULTI CONNECTOR 8P**
1107	1-603-728-00	PRINTED CIRCUIT BOARD, AC-27
1108	**3-531-576-11**	**RIVET**
1109	3-661-396-00	PLATE (N), CONNECTOR, RF
1110	3-667-805-00	CASE, MD
1111	3-667-811-00	LID, MD
1112	3-667-819-00	PLATE (RC), ORNAMENTAL
1113	3-668-814-00	ESCUTCHEON, CONNECTOR
1114	3-668-842-00	PLATE, CONNECTOR, SUB
1115	**3-668-924-00**	**FOOT, REAR**
1116	X-3668-767-1	SHIELD ASS'Y, SW-REG
1117	3-668-989-00	COVER, SWITCH REGULATOR
1118	3-669-941-00	PROTECTOR (U), AC
1119	3-701-699-00	LABEL, GROUND TERMINAL
1120	3-703-082-31	LABEL, CAUTION (FOR UK)

NOTE:

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	Parts No.	Description
1	A-6711-296-A	MOUNTED CIRCUIT BOARD, YC-3
	A-6713-111-A	MOUNTED CIRCUIT BOARD, AU-21A
	A-6715-145-A	MOUNTED CIRCUIT BOARD, SV-47A
1	**1-507-251-XX**	**JACK**
1	**1-507-473-XX**	**JACK, JM-35 M-7A**
	1-507-732-00	**JACK, PIN 2P**
	1-508-945-00	**CONNECTOR (R-M)**
	1-509-891-00	**CONNECTOR, BNC (RECEPTACLE)**
	1-516-779-XX	**SLIDE SWITCH**
	1-561-045-00	**CONNECTOR, (R-F)**
	3-437-228-00	**INSULATOR, JACK**
	3-437-229-01	**INSULATOR (B), JACK**
	3-531-576-11	**RIVET**
	3-654-545-00	**SPACER, BNC** (AEP . . . . S/N UP TO 12150; UK . . . . S/N UP TO 10750)
	3-669-984-00	**WASHER DIA. 9.6** (AEP . . . . S/N 12151 AND HIGHER; UK . . . . S/N 10751 AND HIGHER)
15	3-667-803-00	PANEL, VO CONNECTOR (AEP . . . . S/N UP TO 12150; UK . . . . S/N UP TO 10750)
	3-667-803-03	PANEL, VO CONNECTOR (AEP . . . . S/N 12151 AND HIGHER; UK . . . . S/N 10751 AND HIGHER)
16	3-667-804-00	PANEL, SV CONNECTOR (AEP . . . . S/N UP TO 12150; UK . . . . S/N UP TO 10750)
	3-667-804-00	PANEL, SV CONNECTOR (AEP . . . . S/N 12151 AND HIGHER; UK . . . . S/N 10751 AND HIGHER)
17	3-667-818-00	PLATE (RC), ORNAMENTAL, REAR (L)
18	3-667-824-00	SHIELD (P), YC
19	3-668-841-00	BRACKET, 2P PIN JACK
20	3-668-848-00	PANEL, AU CONNECTOR
21	3-669-908-00	SHIELD, AU

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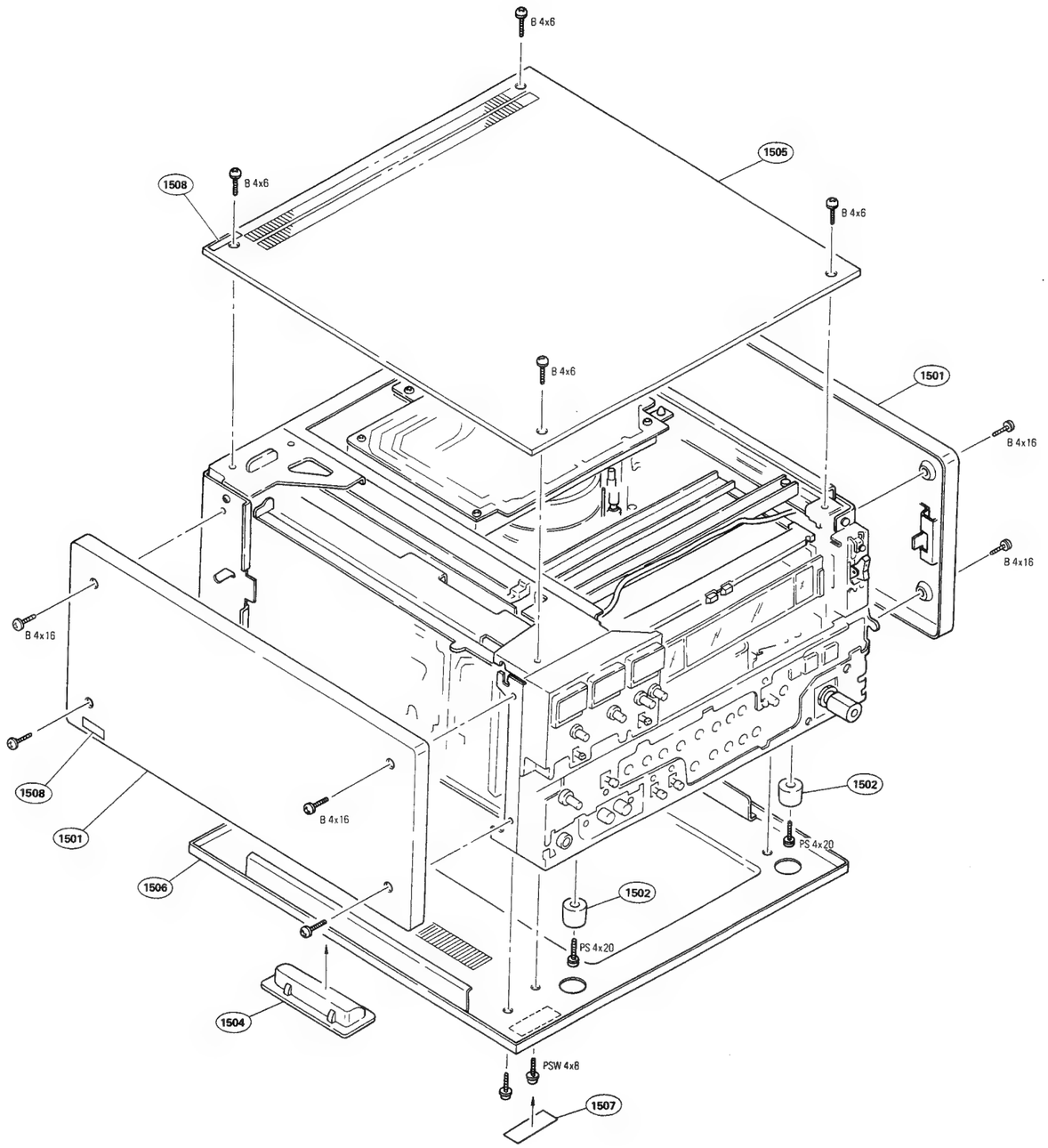
ORNAMENTAL PANEL (1)

Ornamental Panel



No.	Parts No.	Description
1501	X-3668-744-0	PLATE ASS'Y, SIDE
1502	**X-4839-902-X**	**LEG**
1504	3-668-921-00	HANDLE
1505	3-668-940-00	PANEL, UPPER
1506	3-668-941-00	PLATE, BOTTOM
1507	3-703-043-21	LABEL, CAUTION, MAIN
1508	3-703-082-31	LABEL, CAUTION

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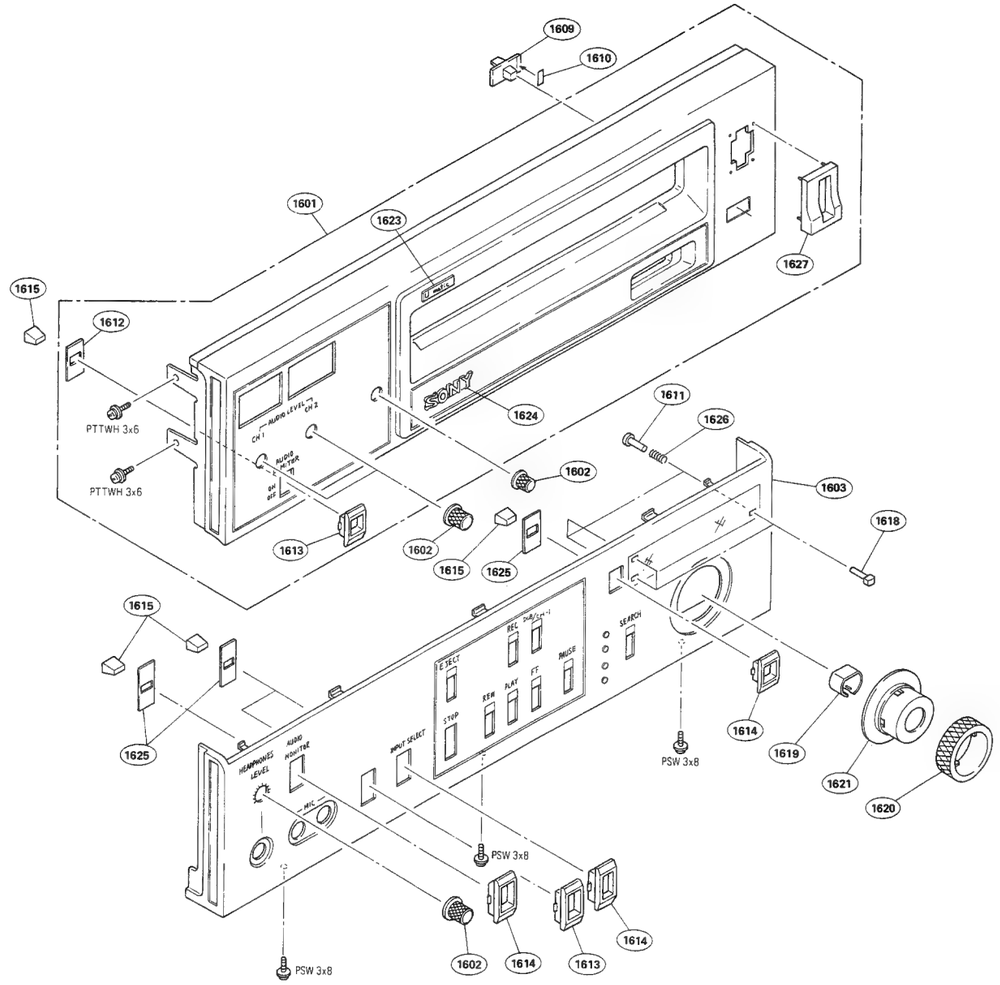
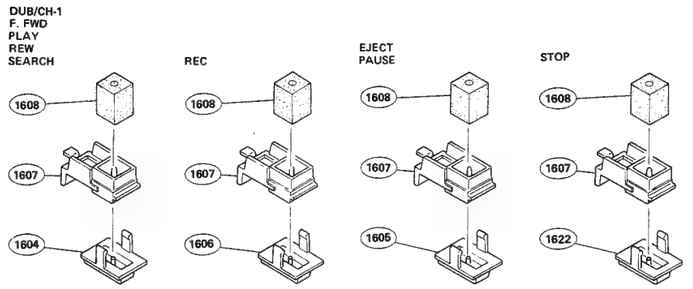
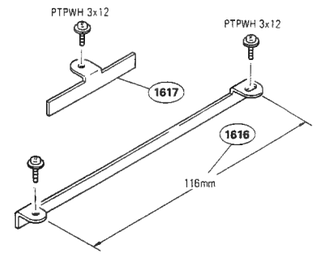
Ornamental Panel (control panel)





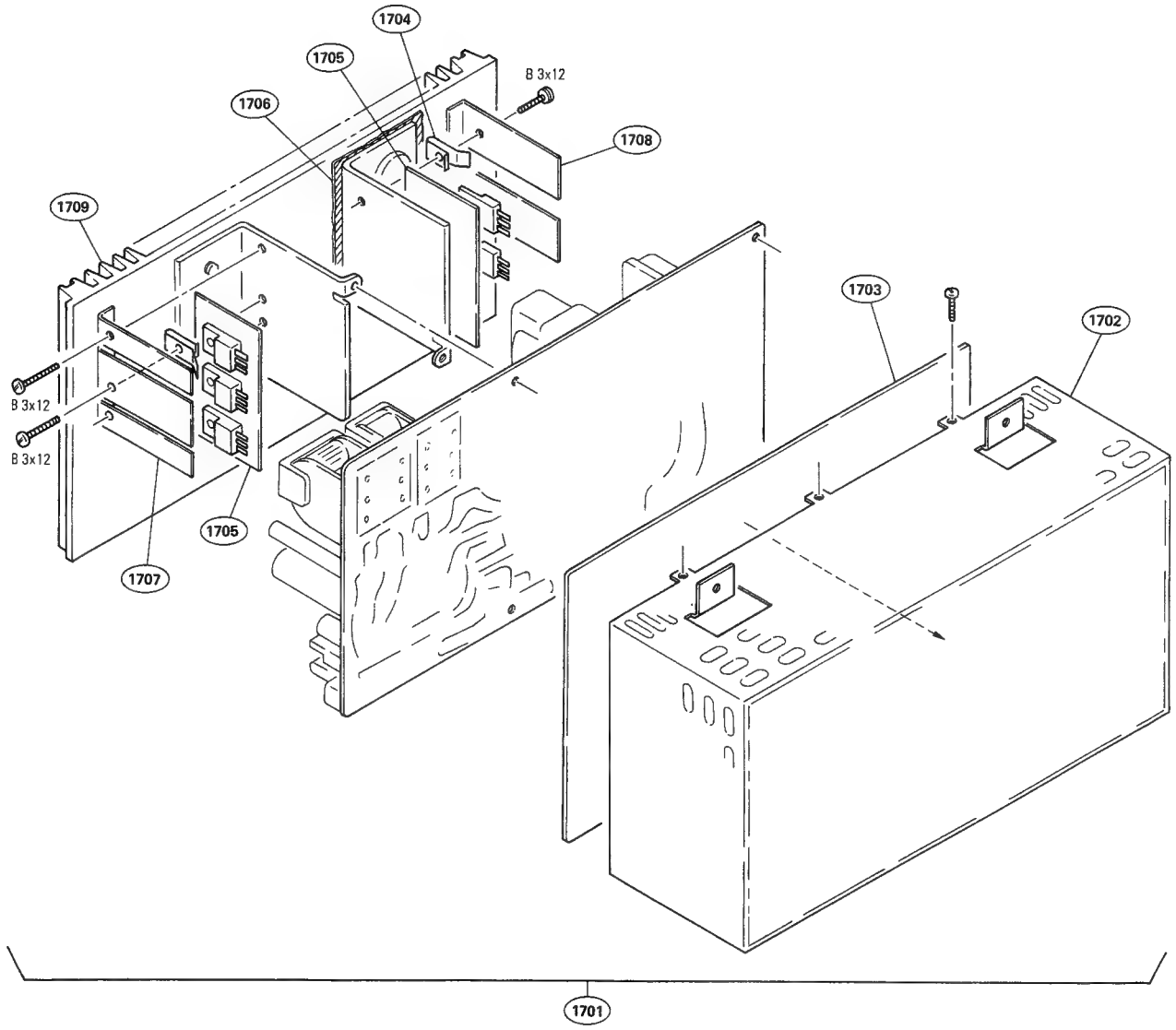


No.	Parts No.	Description
1601	**A-6704-063-A**	**PANEL (R) (PS) BLOCK ASS'Y, FRONT**
1602	**X-3661-073-0**	**KNOB ASS'Y, CONTROL**
1603	**X-3667-801-5**	**PANEL (R) ASS'Y, KEY BOARD**
1604	**2-284-722-01**	**KEY TOP (A)**
1605	**2-284-722-11**	**KEY TOP (A)**
1606	**2-284-722-21**	**KEY TOP (A)**
1607	**2-284-725-00**	**HOLDER, KEY**
1608	2-284-744-00	CUSHION (B), KEY
1609	3-667-814-00	KNOB, TIMER
1610	3-667-831-00	LABEL, TIMER SWITCH
1611	**3-668-009-02**	**PIN, PUSH BUTTON**
1612	3-668-015-00	PLATE (SMALL), SWITCH, LEVER
1613	3-668-016-00	FRAME (SMALL), ORNAMENTAL
1614	3-668-018-00	FRAME (MIDDLE), ORNAMENTAL
1615	**3-668-028-00**	**KNOB (SMALL), LEVER SWITCH**
1616	3-668-903-00	RETAINER (A), KEY
1617	3-668-905-00	RETAINER (C), KEY
1618	**3-668-906-02**	**PUSH BUTTON (3x5)**
1619	**3-668-907-00**	**SPRING**
1620	**3-668-908-00**	**COVER, EN DIAL**
1621	**3-668-909-00**	**DIAL, EN**
1622	**3-668-910-00**	**KEY TOP (STOP)**
1623	**3-668-913-00**	**LABEL, U MATIC**
1624	**3-668-914-00**	**EMBLEM, SONY**
1625	3-669-909-03	PLATE, BLIND, LEVER SWITCH
1626	**4-858-779-00**	**SPRING, COMPRESSION**
1627	**2-251-642-00**	**GUARD, POWER SWITCH**

NOTE:

1. **The shaded and ⚠ -marked components are critical to safety.**
   Replace only with same components as specified.
2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

Switching Regulator (UR-02)



No.	Parts No.	Description
⚠ 1701	1-413-075-00	**SWITCHING REGULATOR (UR-02)**
1702	2-403-440-00	CASE
1703	2-430-484-00	INSULATOR
1704	2-430-683-00	SPRING
1705	2-430-685-00	RUBBER, INSULATING
1706	2-430-686-00	RUBBER, INSULATING
1707	2-430-687-00	RETAINER, SEMICONDUCTOR
1708	2-430-688-00	RETAINER, SEMICONDUCTOR
1709	2-430-813-00	HEAT SINK

NOTE:

1. **The shaded and ⚠ -marked components are critical to safety. Replace only with same components as specified.**
2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

15-3. ELECTRICAL PARTS LIST

Parts that are not listed in the "reference numbers order list" are shown in following table.
Reference numbers are omitted.

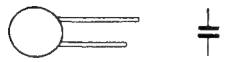
CERAMIC CAPACITOR 0.5 pF through 820 pF
50WV

Value	Parts No.
0.5 pF	1-101-837-00
1	1-102-934-00
1.5	1-101-576-00
2	1-102-935-00
3	1-102-936-00
4	1-102-937-00
5	1-102-942-00
6	1-102-943-00
7	1-102-944-00
8	1-102-945-00
9	1-102-946-00
10	1-102-947-00
11	1-102-948-00
12	1-102-949-00
13	1-102-950-00
15	1-102-951-00
16	1-102-952-00
18	1-102-953-00
20	1-102-958-00
22	1-102-959-00

Value	Parts No.
24 pF	1-102-960-00
27	1-102-961-00
30	1-102-962-00
33	1-102-963-00
36	1-102-964-00
39	1-102-965-00
43	1-102-966-00
47	1-101-880-00
51	1-101-882-00
56	1-101-884-00
62	1-101-886-00
68	1-101-888-00
75	1-101-890-00
82	1-102-971-00
91	1-102-972-00
100	1-102-973-00
110	1-102-815-00
120	1-102-816-00
130	1-101-081-00
150	1-101-361-00

Value	Parts No.
160 pF	1-101-367-00
180	1-102-976-00
200	1-102-977-00
220	1-102-978-00
240	1-102-979-00
270	1-102-980-00
300	1-102-981-00
330	1-102-820-00
360	1-102-821-00
390	1-102-822-00
430	1-102-823-00
470	1-102-824-00
510	1-101-059-00
560	1-102-115-00
680	1-102-116-00
820	1-102-117-00

CERAMIC CAPACITOR 0.001μF through 0.1μF
50WV

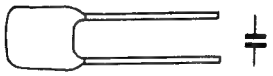


Parts NO. 1-161-□□□-00

Value	Parts No. -□□□-	Substitute
0.001 μF	039	(1-102-074-00)
0.0012	040	
0.0015	041	
0.0018	042	
0.0022	043	(1-102-100-00)
0.0027	044	
0.0033	045	
0.0039	046	(1-102-124-00)
0.0047	047	
0.0056	048	
0.0068	049	
0.0082	050	

Value	Parts No. -□□□-	Substitute
0.01 μF	051	(1-101-118-00)
0.012	052	
0.015	053	
0.018	054	
0.022	055	(1-101-005-00)
0.027	056	
0.033	057	
0.039	058	
0.047	059	(1-101-006-00)
0.056	060	
0.068	061	
0.082	062	
0.1	063	

MYLAR CAPACITOR



0.001μF through 0.22μF
±5% 50WV

Parts No. 1-108-□□□-00

Value	Parts No. −□□□−
0.001μF	555
0.0011	556
0.0012	557
0.0013	558
0.0015	559
0.0016	560
0.0018	561
0.0020	562
0.0022	563
0.0024	564
0.0027	565
0.0030	566
0.0033	567
0.0036	568
0.0039	569

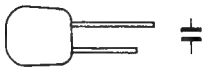
Value	Parts No. −□□□−
0.0043μF	570
0.0047	571
0.0051	572
0.0056	573
0.0062	574
0.0068	575
0.0075	576
0.0082	577
0.0091	578
0.01	579
0.011	580
0.012	581
0.013	582
0.015	583
0.016	584

Value	Parts No. −□□□−
0.018μF	585
0.020	586
0.022	587
0.024	588
0.027	589
0.030	590
0.033	591
0.036	592
0.039	593
0.043	594
0.047	595
0.051	596
0.056	597
0.062	598
0.068	599

Value	Parts No. −□□□−
0.075μF	600
0.082	601
0.091	602
0.1	603
0.11	604
0.12	605
0.13	606
0.15	607
0.16	608
0.18	609
0.20	610
0.22	611

SILVERED MICA CAPACITOR

1 pF through 620 pF
± 5%, 50WV



Parts No. 1-107-□□□-00

Value	Parts No. −□□□−
1 pF	098
2	099
3	100
4	101
5	102
6	103
7	104
8	105
9	106
10	061
11	062
12	063
13	064

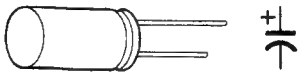
Value	Parts No. −□□□−
15 pF	065
16	066
18	067
20	068
22	069
24	070
27	071
30	072
33	073
36	074
39	075
43	076
47	077

Value	Parts No. −□□□−
51 pF	078
56	079
62	080
68	081
75	082
82	083
91	084
100	085
110	086
120	087
130	088
150	089
160	090

Value	Parts No. −□□□−
180 pF	091
200	092
220	093
240	094
270	095
300	096
330	097
360	231
390	232
430	233
470	234
510	235
560	236
620	237

ELECTROLYTIC CAPACITOR

0.47μF through 470μF
6.3WV through 50 (63, 100)WV



Parts No. 1-123-□□□-00

Value		Parts No. −□□□−
0.47μF	50V	
	100	379
1	50	
	100	380
2.2	50	
	100	381
3.3	25	
	35	
	50	
	100	382
4.7	25	
	35	
	50	
	63	369
10	10	
	16	
	25	
	35	
	50	356
22	16	
	25	330

Value		Parts No. −□□□−
22μF	35V	342
	50	
	63	371
33	6.3	
	10	
	16	318
	25	
	35	343
	50	
	63	372
47	6.3	
	10	306
	16	
	25	332
	35	
	50	359
100	6.3	
	10	307
	16	
	25	333
	35	345

Value		Parts No. −□□□−
100μF	50V	360
220	6.3	
	10	308
	16	321
	25	334
	35	346
	50	361
330	6.3	
	10	309
	16	322
	25	335
	35	347
	50	362
470	6.3	298
	10	310
	16	323
	25	336
	35	348
	50	
	63	377

MYLAR CAPACITOR

0.00047μF through 0.22μF
±5% 50WV

Parts No. 1-130-□□□-00

Value	Parts No. −□□□−
0.00047μF	467
0.00056	468
0.00068	469
0.00082	470
0.001	471
0.0012	472
0.0015	473
0.0018	474
0.0022	475
0.0027	476
0.0033	477

Value	Parts No. −□□□−
0.0039μF	478
0.0047	479
0.0056	480
0.0068	481
0.0082	482
0.01	483
0.012	484
0.015	485
0.018	486
0.022	487
0.027	488

Value	Parts No. −□□□−
0.033μF	489
0.039	490
0.047	491
0.056	492
0.068	493
0.082	494
0.1	495
0.12	496
0.15	497
0.18	498
0.22	499

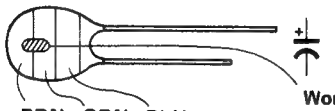
CAPACITOR

Parts that are <u>not</u> listed in the "reference numbers order list" are shown in following table.
Reference numbers are omitted.

TANTALUM CAPACITOR

0.01μF through 100μF ± 10%
3.15V through 35V

NOTE: The value of the parts that are marked by * in the below table are indicated by color code. (to the value with ±20%)



Ex. BRN GRN BLU
1 5 6

15×10^6 pF = 15μF

Working Voltage Color Code

BLK	RED	YEL	GRN	BLU	GRY	WHT
10V	35	6.3	16	20	25	3.15

Parts No. 1-131-□□□-00

Value		Parts No. −□□□−
0.01μ	35V	*396
0.015	35	*397
0.022	35	*398
0.033	35	*399
0.047	35	*400
0.068	35	*401
0.1	35	341
0.15	35	342
0.22	35	343
0.33	25	*409
	35	344
0.47	20	*412
	35	345
0.68	16	*415
	25	*410
	35	346
1.0	10	*418
	25	498

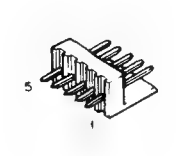
Value		Parts No. −□□□−
1.0μ	35V	347
1.5	6.3	*421
	20	499
	25	354
	35	348
2.2	3.15	*424
	16	500
	20	361
	25	355
	35	349
3.3	10	501
	16	368
	20	362
	25	356
	35	350
4.7	6.3	502
	10	375
	16	369

Value		Parts No. −□□□−
4.7μ	20V	363
	25	357
	35	351
6.8	3.15	503
	6.3	382
	10	376
	16	370
	20	364
	25	358
	35	352
10	3.15	389
	6.3	383
	10	377
	16	371
	20	365
	25	359
	35	353
15	3.15	390
	6.3	384

Value		Parts No. −□□□−
15μ	10V	378
	16	372
	20	366
	25	360
22	3.15	391
	6.3	385
	10	379
	16	373
	20	367
33	3.15	392
	6.3	386
	10	380
	16	374
47	3.15	393
	6.3	387
	10	381
68	3.15	394
	6.3	388
100	3.15	395

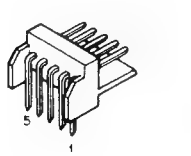
CONNECTOR

top-type receptacle



3P	1-560-008-00
5P	1-560-009-00
6P	1-560-010-00
8P	1-560-011-00
10P	1-560-012-00
12P	1-560-013-00

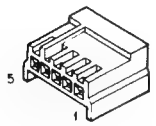
side-type receptacle



3P	1-560-014-00
5P	1-560-015-00
6P	1-560-016-00
8P	1-560-017-00
10P	1-560-018-00
12P	1-560-019-00

plug

housing



3P	1-561-155-00
5P	1-561-156-00
6P	1-561-157-00
8P	1-561-158-00
10P	1-561-159-00
12P	1-561-160-00

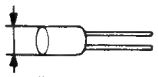
contact

1-560-006-00
(AWG 20 ~ 26)

1-560-007-00
(AWG 26 ~ 30)

MICRO INDUCTOR

1 μH through 470 μH
±5%



5mm dia

Parts No. 1-407-□□□-XX

Value	Parts No. -□□□-
1 μH	178
1.2	179
1.5	180
1.8	181
2.2	182
2.7	183
3.3	184
3.9	185

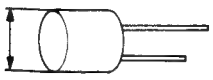
Value	Parts No. -□□□-
4.7 μH	186
5.6	187
6.8	188
8.2	189
10	157
12	158
15	159
18	160

Value	Parts No. -□□□-
22 μH	161
27	162
33	163
39	164
47	165
56	166
68	167
82	168

Value	Parts No. -□□□-
100 μH	169
120	170
150	171
180	172
220	173
270	174
330	175
390	176
470	177

MICRO INDUCTOR

470 μH through 33 mH
±5%



10mm dia

Parts No. 1-407-□□□-00

Value	Parts No. -□□□-
470 μH	488
560	489
680	490
820	491
1 mH	492
1.2	493

Value	Parts No. -□□□-
1.5 mH	494
1.8	495
2.2	496
2.7	497
3.3	498
3.9	499

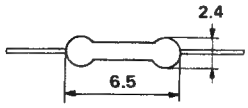
Value	Parts No. -□□□-
4.7 mH	500
5.6	501
6.8	502
8.2	503
10	504
12	505

Value	Parts No. -□□□-
15 mH	506
18	507
22	508
27	509
33	510

RESISTOR

CARBON RESISTOR (1/4W)

±5%, 1/4W, non-special type
1 Ω through 1 MΩ



Parts No. 1-246-□□□-00

Value	Parts No. –□□□–
1 Ω	401
1.1	402
1.2	403
1.3	404
1.5	405
1.6	406
1.8	407
2	408
2.2	409
2.4	410
2.7	411
3	412
3.3	413
3.6	414
3.9	415
4.3	416
4.7	417
5.1	418
5.6	419
6.2	420
6.8	421
7.5	422
8.2	423
9.1	424
10 Ω	425
11	426
12	427
13	428
15	429
16	430
18	431
20	432
22	433
24	434
27	435
30	436

Value	Parts No. –□□□–
33 Ω	437
36	438
39	439
43	440
47	441
51	442
56	443
62	444
68	445
75	446
82	447
91	448
100 Ω	449
110	450
120	451
130	452
150	453
160	454
180	455
200	456
220	457
240	458
270	459
300	460
330	461
360	462
390	463
430	464
470	465
510	466
560	467
620	468
680	469
750	470
820	471
910	472

Value	Parts No. –□□□–
1 kΩ	473
1.1	474
1.2	475
1.3	476
1.5	477
1.6	478
1.8	479
2	480
2.2	481
2.4	482
2.7	483
3.0	484
3.3	485
3.6	486
3.9	487
4.3	488
4.7	489
5.1	490
5.6	491
6.2	492
6.8	493
7.5	494
8.2	495
9.1	496
10 kΩ	497
11	498
12	499
13	500
15	501
16	502
18	503
20	504
22	505
24	506
27	507
30	508

Value	Parts No. –□□□–
33 kΩ	509
36	510
39	511
43	512
47	513
51	514
56	515
62	516
68	517
75	518
82	519
91	520
100 kΩ	521
110	522
120	523
130	524
150	525
160	526
180	527
200	528
220	529
240	530
270	531
300	532
330	533
360	534
390	535
430	536
470	537
510	538
560	539
620	540
680	541
750	542
820	543
910	544
1 MΩ	545

CARBON RESISTOR (1/6W)

±5%, 1/6W, non-special type
2.2Ω through 1MΩ

Parts No. 1-247-□□□-00

Value	Parts No. −□□□−
1Ω	–
1.1	–
1.2	–
1.3	–
1.5	–
1.6	–
1.8	–
2	–
2.2	767
2.4	768
2.7	769
3	770
3.3	771
3.6	772
3.9	773
4.3	774
4.7	775
5.1	776
5.6	777
6.2	778
6.8	779
7.5	780
8.2	781
9.1	782
10Ω	783
11	784
12	785
13	786
15	787
16	788
18	789
20	790
22	791
24	792
27	793
30	794
33	795

Value	Parts No. −□□□−
36Ω	796
39	797
43	798
47	799
51	800
56	801
62	802
68	803
75	804
82	805
91	806
100Ω	807
110	808
120	809
130	810
150	811
160	812
180	813
200	814
220	815
240	816
270	817
300	818
330	819
360	820
390	821
430	822
470	823
510	824
560	825
620	826
680	827
750	828
820	829
910	830
1kΩ	831
1.1	832

Value	Parts No. −□□□−
1.2kΩ	833
1.3	834
1.5	835
1.6	836
1.8	837
2	838
2.2	839
2.4	840
2.7	841
3	842
3.3	843
3.6	844
3.9	845
4.3	846
4.7	847
5.1	848
5.6	849
6.2	850
6.8	851
7.5	852
8.2	853
9.1	854
10kΩ	855
11	856
12	857
13	858
15	859
16	860
18	861
20	862
22	863
24	864
27	865
30	866
33	867
36	868
39	869

Value	Parts No. −□□□−
43kΩ	870
47	871
51	872
56	873
62	874
68	875
75	876
82	877
91	878
100kΩ	879
110	880
120	881
130	882
150	883
160	884
180	885
200	886
220	887
240	888
270	889
300	890
330	891
360	892
390	893
430	894
470	895
510	896
560	897
620	898
680	899
750	900
820	901
910	902
1MΩ	903

CARBON RESISTOR (1/8W)

±5%, 1/8W, non-special type
2.2Ω through 1MΩ

Parts No. 1-246-□□□-00

Value	Parts No. −□□□−	Value	Parts No. −□□□−	Value	Parts No. −□□□−	Value	Parts No. −□□□−
1Ω	–	33Ω	765	1kΩ	783	33kΩ	801
1.1	–	36	826	1.1	844	36	862
1.2	–	39	766	1.2	784	39	802
1.3	–	43	827	1.3	845	43	863
1.5	–	47	767	1.5	785	47	803
1.6	–	51	828	1.6	846	51	864
1.8	–	56	768	1.8	786	56	804
2	–	62	829	2	847	62	865
2.2	751	68	769	2.2	787	68	805
2.4	812	75	830	2.4	848	75	866
2.7	752	82	770	2.7	788	82	806
3	813	91	831	3.0	849	91	867
3.3	753	100Ω	771	3.3	789	100kΩ	807
3.6	814	110	832	3.6	850	110	868
3.9	754	120	772	3.9	790	120	808
4.3	815	130	833	4.3	851	130	869
4.7	755	150	773	4.7	791	150	809
5.1	816	160	834	5.1	852	160	870
5.6	756	180	774	5.6	792	180	810
6.2	817	200	835	6.2	853	200	871
6.8	757	220	775	6.8	793	220	811
7.5	818	240	836	7.5	854		
8.2	758	270	776	8.2	794		
9.1	819	300	837	9.1	855		
10Ω	759	330	777	10kΩ	795		
11	820	360	838	11	856		
12	760	390	778	12	796		
13	821	430	839	13	857		
15	761	470	779	15	797		
16	822	510	840	16	858		
18	762	560	780	18	798		
20	823	620	841	20	859		
22	763	680	781	22	799		
24	824	750	842	24	860		
27	764	820	782	27	800		
30	825	910	843	30	861		

Parts No. 1-247-□□□-00

Value	Parts No. −□□□−
240kΩ	054
270	046
300	055
330	047
360	056
390	048
430	057
470	049
510	058
560	050
620	059
680	051
750	060
820	052
910	061
1MΩ	053

ABBREVIATIONS

Ref. No.	Description	Ref. No.	Description	Ref. No.	Description
C□□, CV□□	CAPACITOR	IC□□	IC	Q□□	TRANSISTOR
CF□□	CERAMIC FILTER	J□□	JACK	R□□, RV□□	RESISTOR
CN□□	CONNECTOR	L□□	INDUCTOR	RY□□	RELAY
D□□	DIODE	M□□	MOTOR	S□□, SW□□	SWITCH
DL□□	DELAY LINE	ME□□	METER	SB□□	SOLAR BATTERY
F□□	FUSE	MIC□□	MICROPHONE	T□□	TRANSFORMER
FB□□	FERRITE BEAD	PG□□	PG COIL	TH□□	THERMISTOR
FL□□	FILTER	PL□□	LAMP	X□□	CRYSTAL
H□□	HEAD	PM□□	SOLENOID		

All capacitors are in micro farads unless otherwise specified.

All inductors are in micro henries unless otherwise specified.

All resistors are in ohms.

Ref. No.	Parts No.	Description
AC-35 BOARD		
		S/N 13351 AND LATER (AEP) **S/N 10851 AND LATER (UK)**
	1-606-380-00	PRINTED CIRCUIT BOARD, AC-35
	1-533-037-XX	**HOLDER, FUSE**
⚠ C1	1-130-456-00	METALLIZED FILM 0.022 20% 250V
⚠ C2	1-130-710-00	POLYESTER FILM 0.1 20% 250V
⚠ C3	1-130-710-00	POLYESTER FILM 0.1 20% 250V
⚠ CN4	1-506-371-00	2P PLUG
⚠	**1-509-910-00**	**2P HOUSING**
⚠	**1-509-898-00**	**RECEPTACLE**
⚠ CN5	1-560-136-00	4P PLUG
⚠	1-561-427-00	4P HOUSING
⚠	1-561-432-00	RECEPTACLE
⚠ F1	**1-532-203-00**	**250V, 2A**
⚠ L1	**1-421-621-00**	**CHOKE COIL**
⚠ L2	**1-421-621-00**	**CHOKE COIL**
⚠ T1	**1-421-470-00**	**LINE FILTER**
⚠ T2	**1-421-470-00**	**LINE FILTER**
⚠ T3	**1-421-259-00**	**LINE FILTER**

NOTES:

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   Replace only with same components as specified.

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Ref. No.	Parts No.	Description
AC-27 BOARD		
		S/N UP TO 13350 (AEP) **S/N UP TO 10850 (UK)**
⚠	1-603-728-00	PRINTED CIRCUIT BOARD, AC-27
	1-533-037-XX	**HOLDER, FUSE**
⚠ **C1**	**1-130-456-00**	**METALLIZED, 0.022 20% 250V**
⚠ CN1	1-506-371-00	2P PLUG
	1-509-910-00	2P HOUSING
⚠ **F1**	**1-532-203-00**	**2A, 250V**
⚠ **T1**	**1-421-470-00**	**LINE FILTER**
AC-36 BOARD		
		S/N UP TO 13350 (AEP) **S/N UP TO 10850 (UK)**
⚠	1-605-661-00	PRINTED CIRCUIT BOARD, AC-36
⚠ **C2**	**1-130-539-00**	**METALLIZED POLYESTER 0.1 20% 250V**
⚠ **C3**	**1-130-160-00**	**METALLIZED POLYESTER 0.22 20% 250V**
⚠ CN2	1-506-371-00	2P PLUG
	1-509-910-00	2P HOUSING
⚠ CN3	1-560-136-00	4P PLUG
	1-561-427-00	4P HOUSING
⚠ **T2**	**1-421-470-00**	**LINE FILTER**
⚠ **T3**	**1-421-259-00**	**LINE FILTER**
AH-3 BOARD		
	1-586-192-00	PRINTED CIRCUIT BOARD, AH-3
AU-21A BOARD		
	⚠A-6713-111-A	MOUNTED CIRCUIT BOARD, AU-21A
		All the diodes that are not listed in this board are 1S1555. (Parts No. 8-719-815-55)
		All the transistors that are not listed in this board are 2SC1364. (Parts No. 8-729-663-47)
C10	**1-107-179-00**	**MICA 270PF 5% 500V**
C11	**1-107-178-00**	**MICA 240PF 5% 500V**
C29	**1-107-209-00**	**MICA 20PF 5% 500V**
C102	**1-107-158-00**	**MICA 30PF 5% 500V**
C210	**1-107-178-00**	**MICA 240PF 5% 500V**
C211	**1-107-178-00**	**MICA 240PF 5% 500V**
C229	**1-107-209-00**	**MICA 20PF 5% 500V**
C504	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
CP501	**1-464-139-00**	**BIAS OSC.**
CP502	**1-464-139-00**	**BIAS OSC.**
CV501	**1-141-251-00**	**TRIMMER 150PF x2**
D5	**8-719-162-07**	**RD6.2E**
D7	**8-719-162-07**	**RD6.2E**
D12	**8-719-162-07**	**RD6.2E**
D18	**8-719-156-25**	**RD5.6E-B2Z**
D20	**8-719-139-07**	**RD3.9E**

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Ref. No.	Parts No.	Description
D205	8-719-162-07	RD6.2E
D207	8-719-162-07	RD6.2E
D212	8-719-162-07	RD6.2E
D219	8-719-156-25	RD5.6E-B2Z
D501	8-719-200-02	10E-2
D502	8-719-200-02	10E-2
D503	8-719-200-02	10E-2
D507	8-719-200-02	10E-2
D508	8-719-182-07	RD8.2E
D509	8-719-115-07	RD15E
D510	8-719-182-07	RD8.2E
IC1	8-759-115-83	uPC1158H2 (NEC)
IC2	8-759-115-83	uPC1158H2 (NEC)
IC3	8-759-705-58	NJM4558D-D (RC4558; RAYTHEON)
IC4	8-759-705-58	NJM4558D-D (RC4558; RAYTHEON)
IC5	8-759-240-16	TC4016BP (CD4016AE/BE; RCA)
IC201	8-759-115-83	uPC1158H2 (NEC)
IC202	8-759-115-83	uPC1158H2 (NEC)
IC203	8-759-705-58	NJM4558D-D (RC4558; RAYTHEON)
IC204	8-759-705-58	NJM4558D-D (RC4558; RAYTHEON)
IC501	8-759-240-16	TC4016BP (CD4016AE/BE; RCA)
L2	1-407-519-00	8
L202	1-407-519-00	8
LV1	1-407-576-00	VAR, 220
LV3	1-409-295-00	VAR, 22mH
LV201	1-407-576-00	VAR, 220
LV202	1-409-295-00	VAR, 22mH
LV203	1-409-295-00	VAR, 22mH
LV501	1-407-284-00	VAR, 1mH
LV502	1-407-284-00	VAR, 1mH
Q1	8-761-622-00	2SC1636
Q2	8-729-612-77	2SA1027R
Q3	8-761-622-00	2SC1636
Q11	8-729-612-77	2SA1027R
Q12	8-729-612-77	2SA1027R

Ref. No.	Parts No.	Description
Q18	8-729-177-32	2SD773
Q201	8-761-622-00	2SC1636
Q202	8-729-612-77	2SA1027R
Q203	8-761-622-00	2SC1636
Q211	8-729-612-77	2SA1027R
Q212	8-729-612-77	2SA1027R
Q216	8-723-304-00	2SK43-4
Q217	8-761-622-00	2SC1636
Q218	8-729-177-32	2SD773
Q506	8-729-612-77	2SA1027R
Q509	8-729-331-53	2SC2315
Q510	8-729-103-43	2SB734
Q512	8-729-612-77	2SA1027R
Q901	8-720-002-97	TX429D-7
Q902	8-720-002-97	TX429D-7
Q903	8-720-002-97	TX429D-7
Q904	8-720-002-97	TX429D-7
R6	1-244-867-00	CARBON 560 5% 1/2W
R57	1-214-750-00	METAL 7.5K 1% 1/4W
R58	1-214-777-00	METAL 100K 1% 1/4W
R59	1-214-754-00	METAL 11K 1% 1/4W
R60	1-214-726-00	METAL 750 1% 1/4W
R206	1-244-867-00	CARBON 560 5% 1/2W
R257	1-214-750-00	METAL 7.5K 1% 1/4W
R258	1-214-777-00	METAL 100K 1% 1/4W
R259	1-214-754-00	METAL 11K 1% 1/4W
R260	1-214-726-00	METAL 750 1% 1/4W
⚠ R516	1-207-636-00	WIREWOUND 100 10% 3W
RV1	1-224-253-XX	VAR, METAL 22K
RV2	1-224-251-XX	VAR, METAL 4.7K
RV3	1-224-254-XX	VAR, METAL 47K
RV4	1-224-248-XX	VAR, METAL 470
RV5	1-224-253-XX	VAR, METAL 22K
RV6	1-224-254-XX	VAR, METAL 47K
RV201	1-224-253-XX	VAR, METAL 22K
RV202	1-224-251-XX	VAR, METAL 4.7K
RV203	1-224-254-XX	VAR, METAL 47K
RV204	1-224-248-XX	VAR, METAL 470
RV205	1-224-253-XX	VAR, METAL 22K
RY502	1-515-475-00	12V, 280 ohm

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Ref. No.	Parts No.	Description
T1	1-427-284-00	OUTPUT
T201	1-427-284-00	OUTPUT
CC-9 BOARD		
	1-604-429-00	PRINTED CIRCUIT BOARD, CC-9
CC-10 BOARD		
	1-604-430-00	PRINTED CIRCUIT BOARD, CC-10
IC1	8-719-104-42	PS4005 (NEC)
CC-11 BOARD		
	1-604-431-00	PRINTED CIRCUIT BOARD, CC-11
IC2	8-719-104-42	PS4005 (NEC)
DC-10E BOARD		
⚠	A-6723-173-A	MOUNTED CIRCUIT BOARD, DC-10E
	1-533-037-XX	FUSE HOLDER
D1	8-719-815-55	1S1555
D31	8-719-200-02	10E-2
D32	8-719-200-02	10E-2
D33	8-719-200-02	10E-2
D34	8-719-200-02	10E-2
D35	8-719-815-55	1S1555
D36	8-719-815-55	1S1555
D51	8-719-911-55	U05G
D71	8-719-815-55	1S1555

Ref. No.	Parts No.	Description
⚠ F1	1-532-237-00	250V, 3.15A
IC1	8-759-145-58	uPC4558C (RC4558; RAYTHEON)
Q1	8-729-663-47	2SC1364
Q31	8-729-177-32	2SD773
Q32	8-729-177-32	2SD773
Q51	8-729-663-47	2SC1364
Q52	8-729-315-63	2SB856
Q54	8-729-612-77	2SA1027R
Q55	8-729-177-32	2SD773
Q71	8-729-663-47	2SC1364
R1	1-214-144-00	METAL 3.3K 1% 1/4W
R2	1-214-143-00	METAL 3K 1% 1/4W
⚠ R31	1-217-224-00	WIREWOUND 100 10% 2W
⚠ R32	1-217-224-00	WIREWOUND 100 10% 2W
R33	1-202-850-00	SOLID 2.2 30% 1/4W
R34	1-202-850-00	SOLID 30% 1/4W
R35	1-202-850-00	SOLID 30% 1/4W
R36	1-202-850-00	SOLID 30% 1/4W
⚠ R51	1-207-621-00	WIREWOUND 1.5 10% 2W
RV71	1-224-251-XX	VAR, METAL 4.7K
EC-19 BOARD		
	1-603-729-00	PRINTED CIRCUIT BOARD, EC-19

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Ref. No.	Parts No.	Description
FR-11 BOARD		
	1-603-585-00	PRINTED CRICUIT BOARD, FR-11
IC1	8-719-104-42	PS4005
IC2	8-719-104-42	PS4005
HP-3 BOARD		
	1-603-734-00	PRINTED CIRCUIT BOARD, HP-3
KY-13B BOARD		
	A-6728-293-A	MOUNTED CIRCUIT BOARD, KY-13B WITH DP-10
	1-603-733-00	PRINTED CIRCUIT BOARD, DP-10
CN11	1-508-857-00	PIN
CN12	1-555-743-00	40P FLAT CABLE
D1	8-719-911-19	1SS119
D2	8-719-911-19	1SS119
D3	8-719-911-19	1SS119
D4	8-719-911-19	1SS119
D6	8-719-911-19	1SS119
D7	8-719-904-55	GL-5HD5
D8	8-719-911-19	1SS119
D11	8-719-911-19	1SS119
D12	8-719-911-19	1SS119
D13	8-719-904-55	GL-5HD5
D15	8-719-904-55	GL-5HD5
D16	8-719-911-19	1SS119
D17	8-719-911-19	1SS119
D18	8-719-904-55	GL-5HD5
D19	8-719-904-55	GL-5HD5
D20	8-719-911-19	1SS119
D22	8-719-904-55	GL-5HD5
D23	8-719-911-19	1SS119
D24	8-719-911-19	1SS119
D25	8-719-911-19	1SS119

Ref. No.	Parts No.	Description
D501	8-719-912-22	SL-1222
D502	8-719-912-22	SL-1222
D503	8-719-951-02	LD-001UR-JK
IC1	8-759-645-16	M54516P (MITSUBISHI)
IC2	8-759-245-43	TC4543BP (MC14543BCP; MOTOROLA)
IC3	8-759-240-42	TC4042BP (CD4042AE/BE; RCA)
IC4	8-759-345-03	HD14503BP (MC14503BCP; MOTOROLA)
PL1	1-518-262-00	5V, 60mA
PL2	1-518-262-00	5V, 60mA
PL3	1-518-262-00	5V, 60mA
PL4	1-518-262-00	5V, 60mA
PL5	1-518-262-00	5V, 60mA
Q1	8-729-612-77	2SA1027R
Q2	8-729-612-77	2SA1027R
Q3	8-729-612-77	2SA1027R
Q4	8-729-612-77	2SA1027R
Q5	8-729-612-77	2SA1027R
Q6	8-729-612-77	2SA1027R
Q7	8-729-612-77	2SA1027R
Q8	8-729-663-47	2SC1364
Q9	8-729-663-47	2SC1364
Q10	8-729-663-47	2SC1364
Q11	8-729-663-47	2SC1364
S1	1-552-539-00	KEY"RESET"
S2	1-552-539-00	KEY"MARK IN-A"
S3	1-552-539-00	KEY"MARK IN-B"
S4	1-516-995-00	SLIDE "PROGRAMMED OPERATION"
S5	1-552-539-00	KEY"SEARCH"
S7	1-552-539-00	KEY"PAUSE"
S8	1-552-539-00	KEY"DUB"
S9	1-552-539-00	KEY"REW"
S10	1-552-539-00	KEY"REC"
S11	1-552-539-00	KEY"PLAY"
S13	1-552-539-00	KEY"FF"
S14	1-552-539-00	KEY"EJECT"
S15	1-552-539-00	KEY"STOP"
S17	1-516-995-00	SLIDE"INPUT SELECT"
S19	1-553-003-00	SLIDE"LINE SELECT"
S22	1-516-963-00	SLIDE"AUDIO MONITOR"

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Ref.No.	Parts No.	Description
LM-7 BOARD		
	1-603-767-00	PRINTED CIRCUIT BOARD, LM-7
MC-14 BOARD		
	1-603-735-00	PRINTED CIRCUIT BOARD, MC-14
PL1	**1-518-462-00**	**12V, 55mA FOR AUDIO CH-1 METER**
PL2	**1-518-462-00**	**12V, 55mA FOR AUDIO CH-2 METER**
R1	**1-202-855-00**	**SOLID 15 30% 1/4W**
R2	**1-244-835-00**	**CARBON 27 5% 1/2W**
RV1	1-226-395-00	VAR, CARBON 20K (B) AUDIO"CH-1 LEVEL"
RV2	**1-226-395-00**	**VAR, CARBON 20K (B) AUDIO"CH-2 LEVEL"**
RV4	**1-226-983-00**	**VAR, CARBON 100K (B) "TRACKING"**
S1	**1-553-003-00**	**SLIDE"AUDIO LIMITER"**
MI-3 BOARD		
	1-603-732-00	PRINTED CIRCUIT BOARD, MI-3
ML-1 BOARD		
	1-603-588-00	PRINTED CIRCUIT BOARD, ML-1
	1-517-072-00	**FUSE HOLDER**
TM1	**1-548-119-00**	**HOURS METER**

Ref.No.	Parts No.	Description
MR-6 BOARD	S/N UP TO 14250 (AEP) S/N UP TO 11300 (UK)	
	⚠A-6725-232-B	MOUNTED CIRCUIT BOARD, MR-6
	All the diodes that are not listed in this board are 1S1555.(Parts No. 8-719-815-55)	
	All the transistors that are not listed in this board are 2SC1364.(Parts No. 8-729-663-47)	
D2	**8-719-200-02**	**10E-2**
D3	**8-719-200-02**	**10E-2**
D4	**8-719-200-02**	**10E-2**
D5	**8-719-200-02**	**10E-2**
D6	**8-719-200-02**	**10E-2**
D7	**8-719-200-02**	**10E-2**
D12	**8-719-200-02**	**10E-2**
D13	**8-719-200-02**	**10E-2**
D14	**8-719-200-02**	**10E-2**
D15	**8-719-200-02**	**10E-2**
D16	**8-719-200-02**	**10E-2**
D17	**8-719-200-02**	**10E-2**
D31	**8-719-200-02**	**10E-2**
D32	**8-719-200-02**	**10E-2**
D33	**8-719-200-02**	**10E-2**
D34	**8-719-200-02**	**10E-2**
D35	**8-719-200-02**	**10E-2**
D36	**8-719-200-02**	**10E-2**
D37	**8-719-200-02**	**10E-2**
IC1	**8-759-135-80**	**uPC358C(LM358JG;TI)**
IC2	**8-759-135-80**	**uPC358C(LM358JG;TI)**
IC3	**8-759-240-66**	**TC4066BP(CD4066AE/BE;RCA)**
IC4	**8-759-240-69**	**TC4069UBP(CD4069UBE;RCA)**
IC5	**8-759-645-17**	**M54517P(MITSUBISHI)**
IC6	**8-759-345-38**	**HD14538BP (MC14538BCP;MOTOROLA)**
Q2	**8-729-103-43**	**2SB734**
Q3	**8-729-177-43**	**2SD774**
Q4	**8-729-103-43**	**2SB734**
Q6	**8-729-177-43**	**2SD774**
Q12	**8-729-103-43**	**2SB734**

NOTES:

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2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref.No.	Parts No.	Description
Q13	8-729-177-43	2SD774
Q14	8-729-103-43	2SB734
Q16	8-729-177-43	2SD774
Q25	8-729-177-43	2SD774
Q26	8-729-889-40	2SD894
Q31	8-729-199-80	2SD998
Q32	8-729-811-11	2SD1111
Q34	8-729-199-80	2SD998
Q35	8-729-811-11	2SD1111
Q38	8-729-199-80	2SD998
⚠R63	1-210-859-00	CARBON 1.2 5% 1/8W
⚠R73	1-210-859-00	CARBON 1.2 5% 1/8W
⚠R83	1-210-859-00	CARBON 1.2 5% 1/8W
⚠R91	1-207-674-00	WIREWOUND 4.7 10% 6W
RV1	1-224-251-XX	VAR, METAL 4.7K
RV2	1-224-251-XX	VAR, METAL 4.7K
RV3	1-224-251-XX	VAR, METAL 4.7K
RV4	1-224-251-XX	VAR, METAL 4.7K

MR-11 BOARD 14251 AND LATER (AEP)
11301 AND LATER (UK)

⚠	A-6725-358-A	MOUNTED CIRCUIT BOARD, MR-11

All the diodes that are not listed in this board are 1S1555.(Parts No. 8-719-815-55)

All the transistors that are not listed in this board are 2SC1364.(Parts No. 8-729-663-47)

D1	8-719-200-02	10E-2
D2	8-719-200-02	10E-2
D3	8-719-200-02	10E-2
D4	8-719-200-02	10E-2
D31	8-719-200-02	10E-2
D32	8-719-200-02	10E-2
D33	8-719-200-02	10E-2
D34	8-719-200-02	10E-2
D35	8-719-200-02	10E-2
D36	8-719-200-02	10E-2
D37	8-719-200-02	10E-2

Ref.No.	Parts No.	Description
IC1	8-759-135-80	uPC358C(LM358JG;TI)
IC2	8-759-135-80	uPC358C(LM358JG;TI)
IC3	8-759-240-66	TC4066BP(CD4066AE/BE;RCA)
IC4	8-759-240-69	TC4069UBP(CD4069UBE;RCA)
IC5	8-759-645-17	M54517P(MITSUBISHI)
IC6	8-759-345-38	HD14538BP (MC14538BCP;MOTOROLA)
IC7	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC8	8-759-600-24	M54543L(MITSUBISHI)
IC9	8-759-600-24	M54543L(MITSUBISHI)
Q1	8-729-900-37	DTC124EF
Q2	8-729-900-37	DTC124EF
Q3	8-729-900-37	DTC124EF
Q4	8-729-900-37	DTC124EF
Q5	8-729-900-37	DTC124EF
Q6	8-729-900-37	DTC124EF
Q7	8-729-900-37	DTC124EF
Q8	8-729-900-37	DTC124EF
Q9	8-729-900-37	DTC124EF
Q10	8-729-900-37	DTC124EF
Q11	8-729-900-37	DTC124EF
Q12	8-729-900-37	DTC124EF
Q13	8-729-900-37	DTC124EF
Q25	8-729-177-43	2SD774
Q26	8-729-889-40	2SD894
Q27	8-729-663-47	2SC1364
Q28	8-729-663-47	2SC1364
Q31	8-729-199-80	2SD998
Q32	8-729-811-11	2SD1111
Q33	8-729-663-47	2SC1364
Q34	8-729-199-80	2SD998
Q35	8-729-811-11	2SD1111
Q36	8-729-663-47	2SC1364
Q37	8-729-663-47	2SC1364
Q38	8-729-199-80	2SD998
Q39	8-729-663-47	2SC1364
Q40	8-729-663-47	2SC1364
⚠R63	1-210-859-00	CARBON 1.2 5% 1/8W
⚠R73	1-210-859-00	CARBON 1.2 5% 1/8W
⚠R83	1-210-859-00	CARBON 1.2 5% 1/8W
⚠R91	1-207-674-00	WIREWOUND 4.7 10% 6W
RV1	1-224-251-XX	VAR, METAL 4.7K
RV2	1-224-251-XX	VAR, METAL 4.7K
RV3	1-224-251-XX	VAR, METAL 4.7K
RV4	1-224-252-XX	VAR, METAL 10K

NOTES:

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Ref.No.	Parts No.	Description
PD-16 BOARD		
	⚠A-6717-212-A	MOUNTED CIRCUIT BOARD, PD-16
D1	8-719-200-02	10E-2
D2	8-719-200-02	10E-2
D3	8-719-200-02	10E-2
D4	8-719-200-02	10E-2
D5	8-719-200-02	10E-2
D6	8-719-200-02	10E-2
D7	8-719-200-02	10E-2
D8	8-719-200-02	10E-2
D9	8-719-200-02	10E-2
D10	8-719-200-02	10E-2
D11	8-719-200-02	10E-2
D12	8-719-200-02	10E-2
D13	8-719-200-02	10E-2
D14	8-719-200-02	10E-2
D15	8-719-200-02	10E-2
D16	8-719-904-55	GL-5HD5
Q1	8-729-811-11	2SD1111
Q2	8-729-663-47	2SC1364
Q3	8-729-199-80	2SD998
Q4	8-729-811-11	2SD1111
Q5	8-729-663-47	2SC1364
Q6	8-729-199-80	2SD998
Q7	8-729-811-11	2SD1111
Q8	8-729-663-47	2SC1364
Q9	8-729-199-80	2SD998
Q10	8-729-811-11	2SD1111
Q11	8-729-663-47	2SC1364
Q12	8-729-199-80	2SD998
Q13	8-729-811-11	2SD1111
Q14	8-729-663-47	2SC1364
Q15	8-729-199-80	2SD998
⚠R4	1-247-072-00	CARBON 1.2 5% 1/4W
⚠R8	1-247-072-00	CARBON 1.2 5% 1/4W
⚠R15	1-247-072-00	CARBON 1.2 5% 1/4W
⚠R19	1-247-072-00	CARBON 1.2 5% 1/4W
⚠R23	1-247-072-00	CARBON 1.2 5% 1/4W

Ref.No.	Parts No.	Description
PH-4 BOARD		
	1-603-589-00	PRINTED CIRCUIT BOARD, PH-4
PC1	1-806-232-11	MB-1102,"TENSION REGULATOR"
PH-5 BOARD		
	1-603-737-00	PRINTED CIRCUIT BOARD, PH-5
D1	8-719-951-04	BR5104S
Q1	8-729-810-20	SPS102
PT-9 BOARD		
	1-605-018-00	PRINTED CIRCUIT BOARD, PT-9
Q1	8-729-385-82	2SB857(PT-9A)
Q1	8-729-377-12	2SA771(PT-9B)
Q1	8-729-331-53	2SC2315(PT-9C)
RP-8A BOARD		
	A-6711-297-A	MOUNTED CIRCUIT BOARD, RP-8A
C57	1-107-048-00	MICA 6.8PF 500V
C62	1-107-048-00	MICA 6.8PF 500V
C66	1-107-047-00	MICA 5.6PF 500V
C67	1-107-047-00	MICA 5.6PF 500V
CP1	8-729-677-14	2SC2771
CP2	8-729-677-14	2SC2771
CV1	1-141-244-00	TRIMMER 7PF
CV2	1-141-244-00	TRIMMER 7PF

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Ref.No.	Parts No.	Description
D1	8-719-815-55	1S1555
D2	8-719-815-59	1S1555S
D3	8-719-815-55	1S1555
D4	8-719-815-55	1S1555
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-130-07	RD3.0E
D8	8-719-130-07	RD3.0E
D9	8-719-815-55	1S1555
DL1	1-415-231-00	0.3uS
DL2	1-415-242-00	42nS
DL3	1-415-146-00	1H
*DL1	1-415-231-21	0.3μS
FL1	1-231-580-00	HPF
FL2	1-231-579-00	LPF
FL3	1-231-581-00	HPF
*FL1	1-231-580-21	HPF
*FL2	1-231-579-21	LPF
*FL3	1-231-581-21	HPF
IC1	8-751-300-00	CX-130(SONY)
IC2	8-751-340-00	CX-134A(SONY)
IC3	8-759-131-10	uPC311C(NEC)
LV1	1-411-107-00	PEAKING
LV2	1-411-107-00	PEAKING
LV3	1-407-267-00	VAR,1mH
Q2	8-724-375-01	2SC403C
Q3	8-724-375-01	2SC403C
Q4	8-724-375-01	2SC403C
Q5	8-724-375-01	2SC403C
Q6	8-724-375-01	2SC403C
Q7	8-729-384-48	2SA844
Q8	8-729-113-32	2SB733
Q9	8-761-622-00	2SC1636
Q10	8-761-622-00	2SC1636
Q11	8-761-622-00	2SC1636
Q12	8-765-423-00	2SK152-3
Q13	8-761-622-00	2SC1636
Q14	8-765-423-00	2SK152-3
Q15	8-729-663-47	2SC1364
Q16	8-724-375-01	2SC403C

*S/N 15001 AND LATER (AEP)
S/N 11401 AND LATER (UK)

Ref.No.	Parts No.	Description
Q17	8-729-663-47	2SC1364
Q18	8-724-375-01	2SC403C
Q19	8-729-384-48	2SA844
Q20	8-724-375-01	2SC403C
Q21	8-724-375-01	2SC403C
Q22	8-729-663-47	2SC1364
Q23	8-729-663-47	2SC1364
Q24	8-724-375-01	2SC403C
Q25	8-724-375-01	2SC403C
Q26	8-724-375-01	2SC403C
Q27	8-724-375-01	2SC403C
Q28	8-729-384-48	2SA844
R25	1-202-859-00	SOLID 68 5% 1/4W
R35	1-214-091-00	METAL 20 1 1/4W
R36	1-214-091-00	METAL 20 1 1/4W
R38	1-214-091-00	METAL 20 1 1/4W
R39	1-214-091-00	METAL 20 1 1/4W
R70	1-244-861-00	CARBON 330 5% 1/2W
R107	1-206-640-00	METAL 100 5% 2W
R124	1-247-083-00	NF CARBON 10 5% 1/4W
RV1	1-224-249-XX	VAR, METAL 1K
RV2	1-224-251-XX	VAR, METAL 4.7K
RV3	1-224-251-XX	VAR, METAL 4.7K
RV4	1-224-550-21	VAR, METAL 220
RV5	1-224-250-XX	VAR, METAL 2.2K
RV6	1-224-550-21	VAR, METAL 220
RV7	1-224-250-XX	VAR, METAL 2.2K
RV8	1-224-250-XX	VAR, METAL 2.2K
RV9	1-224-250-XX	VAR, METAL 2.2K
RV10	1-224-250-XX	VAR, METAL 2.2K
RV11	1-224-250-XX	VAR, METAL 2.2K
RV12	1-224-134-XX	VAR, METAL 470K
RV13	1-224-251-XX	VAR, METAL 4.7K
T1	1-426-017-00	AF
T2	1-427-472-00	OUTPUT
T3	1-427-472-00	OUTPUT
T4	1-426-018-00	AF
T5	1-426-018-00	AF

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Ref.No.	Parts No.	Description
SV-47A BOARD		
⚠	A-6715-145-A	MOUNTED CIRCUIT BOARD, SV-47A
		All the diodes that are not listed in this board are 1S1555.(Parts No. 8-719-815-55)
		All the transistors that are not listed in this board are 2SC1364.(Parts No. 8-729-663-47)
C37	1-130-224-00	POLYPROPYLENE 0.015 5% 50V
C38	1-123-311-00	ELECT 1000 20% 10V
D15	8-719-982-04	ERB81-004
D16	8-719-982-04	ERB81-004
IC1	8-759-135-80	uPC358C(LM358JG;TI)
IC2	8-759-045-38	MC14538BCP(MOTOROLA)
IC3	8-759-240-11	TC4011BP(CD4011AE/BE;RCA)
IC4	8-759-705-58	NJM4558D-D (RC4558;RAYTHEON)
IC5	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC6	8-749-939-14	BX-3914(SONY)
IC7	8-751-940-01	CX-194A-1(SONY)
IC8	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC9	8-759-045-38	MC14538BCP(MOTOROLA)
IC10	8-759-132-40	uPC324C(LM324;NSC)
IC11	8-759-135-80	uPC358C(LM358JG;TI)
IC12	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC13	8-759-135-80	uPC358C(LM358JG;TI)
IC14	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC15	8-759-135-80	uPC358C(LM358JG;TI)
IC16	8-759-132-40	uPC324C(LM324;NSC)
IC17	8-759-745-61	NJM4560D-D(NJM4560D;JRC)
IC18	8-759-240-93	TC4093BP(CD4093BE;RCA)
IC19	8-759-240-30	TC4030BP(CD4030AE/BE;RCA)
IC20	8-759-240-82	TC4082BP(CD4082BE;RCA)
IC21	8-759-240-25	TC4025BP(CD4025AE/BE;RCA)
IC22	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC23	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC24	8-759-240-30	TC4030BP(CD4030AE/BE;RCA)
IC25	8-759-045-38	MC14538BCP(MOTOROLA)
IC27	8-749-939-15	BX-3915(SONY)
IC28	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC29	8-759-135-80	uPC358C(LM358JG;TI)
IC30	8-759-135-80	uPC358C(LM358JG;TI)
IC601	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC602	8-759-045-38	MC14538BCP(MOTOROLA)
IC603	8-759-745-60	NJM4560D(JRC)
IC604	8-759-045-38	MC14538BCP(MOTOROLA)
Q8	8-729-103-43	2SB734
Q12	8-729-177-43	2SD774
Q18	8-729-612-77	2SA1027R
Q34	8-761-622-00	2SC1636
Q37	8-729-177-43	2SD774
Q39	8-729-612-77	2SA1027R
Q602	8-724-375-01	2SC403C
⚠ R30	1-207-636-00	WIREWOUND 100 10% 3W
R87	1-214-156-00	METAL 10K 1% 1/4W
⚠ R90	1-207-636-00	WIREWOUND 100 10% 3W
R200	1-214-178-00	METAL 82K 1% 1/4W
R201	1-212-720-00	METAL 560K 1% 1/2W
R285	1-244-853-00	CARBON 150 5% 1/2W
R343	1-207-634-00	WIREWOUND 68 10% 3W
RV1	1-224-255-XX	VAR, METAL 100K
RV2	1-224-661-00	VAR, METAL 47K
RV3	1-224-661-00	VAR, METAL 47K
RV4	1-224-254-XX	VAR, METAL 47K
RV5	1-224-251-XX	VAR, METAL 4.7K
RV6	1-224-134-XX	VAR, METAL 470K
RV7	1-224-254-XX	VAR, METAL 47K
RV8	1-224-248-XX	VAR, METAL 470
RV9	1-224-252-XX	VAR, METAL 10K
RV10	1-224-251-XX	VAR, METAL 4.7K
RV11	1-224-251-XX	VAR, METAL 4.7K
RV12	1-224-250-XX	VAR, METAL 2.2K
RV13	1-224-250-XX	VAR, METAL 2.2K
RV14	1-224-250-XX	VAR, METAL 2.2K
RV15	1-224-252-XX	VAR, METAL 10K
RV16	1-224-254-XX	VAR, METAL 47K
RV17	1-224-248-XX	VAR, METAL 470
RV601	1-224-254-XX	VAR, METAL 47K
X1	1-527-980-00	OSC. 4.433618MHz

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Ref.No.	Parts No.	Description
SW-43 BOARD		
	1-603-434-00	PRINTED CIRCUIT BOARD, SW-43
IC1	8-719-104-42	PS4005 (NEC)
SW-46 BOARD		
	1-603-590-00	PRINTED CIRCUIT BOARD, SW-46
IC1	8-719-104-42	PS4005 (NEC)
IC2	8-719-104-42	PS4005 (NEC)
SW-50 BOARD		
	1-603-435-00	PRINTED CIRCUIT BOARD, SW-50
IC1	8-719-104-42	PS4005 (NEC)
SY-68C BOARD		
	⚠A-6717-229-D	MOUNTED CIRCUIT BOARD, SY-68C WITH PT-9, BU-1
	1-605-018-00	PRINTED CIRCUIT BOARD, PT-9
	1-605-677-00	PRINTED CIRCUIT BOARD, BU-1
	All the diodes that are not listed in this board are 1S1555.(Parts No. 8-719-815-55)	
	1-561-521-00	HOUSING 12P
	1-561-066-00	CONTACT
C3	**1-123-311-00**	**ELECT 1000 20% 10V**
CN1	1-564-391-11	40P
CN21	1-560-363-00	RECEPTACLE 12P
CN22	1-560-363-00	RECEPTACLE 12P
CN23	1-560-363-00	RECEPTACLE 12P

Ref.No.	Parts No.	Description
D9	**8-719-100-27**	**RD4.7E-B2**
IC1	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC2	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC3	**8-759-345-03**	**HD14503BP (MC14503BCP;MOTOROLA)**
IC4	**8-759-345-03**	**HD14503BP (MC14503BCP(MOTOROLA)**
IC5	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC6	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC7	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC8	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC9	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC10	**8-759-241-75**	**TC40175BP (MC14175BCP;MOTOROLA)**
IC11	**8-759-345-03**	**HD14503BP (MC14503BCP(MOTOROLA)**
IC12	**8-759-220-02**	**TC40H002P(TOSHIBA)**
IC13	**8-759-223-68**	**TC40H368P(TOSHIBA)**
IC14	**8-759-903-90**	**SN74LS390N(TI)**
IC15	**8-759-901-39**	**SN74LS139N(TI)**
IC16	8-759-104-44	μPD444C (MB8114NL; FUJITSU)
IC17	8-759-104-44	μPD444C (MB8114NL; FUJITSU) S/N UP TO 14250 (AEP) S/N UP TO 11300 (UK)
IC16	8-759-900-11	SN74LS11N (TI)
IC17	8-759-901-29	MSM5128-15RS (OKI) S/N 14251 AND LATER (AEP) S/N 11301 AND LATER (UK)
IC18	8-759-241-75	TC40175BP (MC14175BCP; MOTOROLA)
IC19	8-759-241-75	TC40175BP (MC14175BCP; MOTOROLA)
IC20	8-759-901-38	SN74LS138N (TI)
IC21	8-759-901-38	SN74LS138N (TI)
IC22	8-759-906-82	LH0082 (SHARP)
IC23	8-759-906-80	LH0080 (SHARP)
IC24	8-759-758-19	8516S68P1D (OKI)
IC25	8-759-758-20	8516S68P2D (OKI)
IC26	8-759-758-21	8516S68P3D (OKI) S/N UP TO 14250 (AEP) S/N UP TO 11300 (UK)
IC26	8-759-759-98	MBM2764S68PV1 (FUJITSU) S/N 14251 AND LATER (AEP) S/N 11301 AND LATER (UK)

NOTES:

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Ref.No.	Parts No.	Description
IC27	8-759-902-45	SN74LS245N(TI)
IC28	8-759-240-24	TC4024BP(CD4024AE/BE;RCA)
IC29	8-759-241-75	TC40175BP (MC14175BCP;MOTOROLA)
IC30	8-759-241-75	TC40175BP (MC14175BCP;MOTOROLA)
IC31	8-759-345-03	HD14503BP (MC14503BCP;MOTOROLA)
IC32	8-759-345-03	HD14503BP (MC14503BCP;MOTOROLA)
IC33	8-759-345-03	HD14503BP (MC14503BCP;MOTOROLA)
IC34	8-759-345-03	HD14503BP (MC14503BCP;MOTOROLA)
IC35	8-759-345-03	HD14503BP (MC14503BCP;MOTOROLA)
IC36	8-759-345-03	HD14503BP (MC14503BCP(MOTOROLA)
IC37	8-759-241-75	TC40175BP (MC14175BCP;MOTOROLA)
IC38	8-759-241-75	TC40175BP (MC14175BCP;MOTOROLA)
IC39	8-759-345-03	HD14503BP (MC14503BCP(MOTOROLA)
IC40	8-759-241-75	TC40175BP (MC14175BCP;MOTOROLA)
IC41	8-759-241-75	TC40175BP (MC14175BCP;MOTOROLA)
IC101	8-759-645-17	M54517P(MITSUBISHI)
IC102	8-759-645-17	M54517P(MITSUBISHI)
IC103	8-759-645-17	M54517P(MITSUBISHI)
IC104	8-759-240-71	TC4071BP(CD4071BE;RCA)
IC105	8-759-240-81	TC4081BP(CD4081BE;RCA)
IC106	8-759-240-69	TC4069UBP(CD4069UBE;RCA)
IC107	8-759-645-17	M54517P(MITSUBISHI)
IC108	8-759-645-17	M54517P(MITSUBISHI)
IC109	8-759-729-03	NJM2903D(JRC)
IC111	8-759-745-50	NJM4558D-D (RC4558;RAYTHEON)
IC112	8-759-145-58	uPC4558C(RC4558;RAYTHEON)
IC113	8-759-240-13	TC4013BP(TOSHIBA)
IC114	8-759-645-17	M54517P(MITSUBISHI)
IC115	8-759-245-20	TC4520BP (MC14520BCP;MOTOROLA)
IC116	8-743-430-00	BX-343(SONY)
IC117	8-759-240-21	TC4021BP(CD4021AE/BE;RCA)
IC118	8-759-240-21	TC4021BP(CD4021AE/BE;RCA)
IC119	8-759-645-17	M54517P(MITSUBISHI)
IC120	8-759-240-81	TC4081BP(CD4081BE;RCA)
IC121	8-759-240-71	TC4071BP(CD4071BE;RCA)
IC122	8-759-240-81	TC4081BP(CD4081BE;RCA)
IC123	8-759-645-17	M54517P(MITSUBISHI)
IC124	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC125	8-759-240-69	TC4069UBP(CD4069UBE;RCA)

Ref.No.	Parts No.	Description
IC126	8-759-240-81	TC4081BP(CD4081BE;RCA)
IC127	8-759-240-22	TC4022BP(CD4022AE/BE;RCA)
IC128	8-759-240-71	TC4071BP(CD4071BE;RCA)
IC129	8-759-900-04	SN74LS04N(SN7404N;TI)
IC130	8-759-345-03	HD14503BP (MC14503BCP;MOTOROLA)
IC131	8-759-240-81	TC4081BP(CD4081BE;RCA)
IC132	8-759-240-73	TC4073BP(CD4073BE;RCA)
IC133	8-759-240-71	TC4071BP(CD4071BE;RCA)
IC134	8-759-240-71	TC4071BP(CD4071BE;RCA)
IC135	8-759-240-69	TC4069UBP(CD4069UBE;RCA)
IC136	8-759-987-47	MB8747(FUJITSU)
IC137	8-759-345-38	HD14538BP (MC14538BCP;MOTOROLA)
IC138	8-759-240-69	TC4069UBP(CD4069UBE;RCA)
IC139	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC140	8-759-240-30	TC4030BP(CD4030AE/BE;RCA)
IC141	8-759-240-81	TC4081BP(CD4081BE;RCA)
IC142	8-759-345-38	HD14538BP (MC14538BCP;MOTOROLA)
IC143	8-759-240-71	TC4071BP(CD4071BE;RCA)
IC144	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC145	8-759-240-73	TC4073BP(CD4073BE;RCA)
IC146	8-759-240-73	TC4073BP(CD4073BE;RCA)
IC147	8-759-240-24	TC4024BP(CD4024AE/BE;RCA)
L2	1-407-885-00	0.1mH
Q1	8-729-331-53	2SC2315
Q2	8-729-612-77	2SA1027R
Q3	8-729-606-33	2SC2603
Q4	8-729-103-43	2SB734
Q5	8-729-606-33	2SC2603
Q6	8-729-606-33	2SC2603
Q11	8-729-606-33	2SC2603
Q12	8-729-606-33	2SC2603
Q13	8-729-606-33	2SC2603
Q14	8-729-606-33	2SC2603
Q15	8-729-102-03	2SC1020
Q16	8-729-606-33	2SC2603
Q17	8-729-103-43	2SB734
Q18	8-729-177-43	2SD774
Q19	8-729-606-33	2SC2603
Q20	8-729-606-33	2SC2603
Q31	8-729-606-33	2SC2603
Q32	8-729-606-33	2SC2603
Q33	8-729-606-33	2SC2603
Q34	8-729-606-33	2SC2603

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Ref.No.	Parts No.	Description
Q35	8-729-606-33	2SC2603
Q36	8-729-606-33	2SC2603
Q37	8-729-606-33	2SC2603
Q38	8-729-606-33	2SC2603
Q39	8-729-606-33	2SC2603
Q40	8-729-606-33	2SC2603
Q41	8-729-606-33	2SC2603
Q42	8-729-606-33	2SC2603
Q43	8-729-606-33	2SC2603
Q44	8-729-606-33	2SC2603
⚠ R1	1-212-359-00	METAL 0.82 5% 1W
R24	1-210-829-00	CARBON 5.1 5% 1/4W
R401	1-207-619-00	WIREWOUND 0.82 10 3W
RV1	1-224-249-XX	VAR, METAL 1K
RV2	1-224-253-XX	VAR, METAL 22K
X1	1-527-827-00	OSC. 4.9152MHz

YC-3 BOARD

A-6711-296-A MOUNTED CIRCUIT BOARD, YC-3

All the diodes that are not listed in this board are 1S1555.(Parts No. 8-719-815-55)

C14	1-107-159-00	MICA 33PF 5% 500V
C20	1-109-685-00	MICA 330PF 1% 500V
C30	1-107-206-00	MICA 15PF 5% 500V
C46	1-107-048-00	MICA 6.8PF 500V
C56	1-107-157-00	MICA 27PF 5% 500V
C62	1-123-311-00	ELECT 1000 20% 10V
C63	1-123-311-00	ELECT 1000 20% 10V
C71	1-109-688-00	MICA 430PF 1% 500V
C76	1-107-202-00	MICA 10PF 5% 500V
C77	1-107-205-00	MICA 13PF 5% 500V
C90	1-107-049-00	MICA 8.2PF 0.5PF 500V
C92	1-131-344-00	TANTALUM 0.33 10% 35V
C94	1-130-014-00	POLYPROPYLENE 470PF 5% 50V
C95	1-130-016-00	POLYPROPYLENE 680PF 5% 50V
C96	1-130-014-00	POLYPROPYLENE 470PF 5% 50V

Ref.No.	Parts	Description
C113	1-107-203-00	MICA 11PF 5% 500V
C117	1-107-209-00	MICA 20PF 5% 500V
C123	1-107-208-00	MICA 18PF 5% 500V
C164	1-107-158-00	MICA 30PF 5% 500V
C165	1-107-159-00	MICA 33PF 5% 500V
C197	1-107-206-00	MICA 15PF 5% 500V
C216	1-107-210-00	MICA 22PF 5% 500V
C217	1-107-159-00	MICA 33PF 5% 500V
C220	1-107-209-00	MICA 20PF 5% 500V
C221	1-107-206-00	MICA 15PF 5% 500V
CV1	1-141-246-00	TRIMMER 18P
D6	8-719-139-07	RD3.9E
D9	8-719-815-59	1S1555S
D19	8-719-151-07	RD5.1E-B
DL1	1-415-231-00	0.3uS
DL2	1-415-231-00	0.3uS
*DL1	1-415-231-21	0.3μS
*DL2	1-415-231-21	0.3μS
FL1	1-235-012-00	LPF
FL2	1-235-002-00	LPF
FL3	1-235-044-00	LPF
FL4	1-231-281-12	CERAMIC FILTER
FL5	1-231-295-00	BPF
FL6	1-231-578-00	LPF
*FL1	1-235-012-21	LPF
*FL5	1-231-295-31	BPF
*FL6	1-231-578-21	LPF
IC1	8-759-240-13	TC4013BP(TOSHIBA)
IC3	8-759-240-52	TC4052BP(CD4052BE;RCA)
IC4	8-749-938-90	BX-389(SONY)
IC5	8-751-300-00	CX-130(SONY)
IC6	8-759-200-60	TA7060AP(TA7060P;TOSHIBA)
IC7	8-759-601-87	CX-187(SONY)
IC8	8-749-938-80	BX-388(SONY)
IC9	8-758-908-59	CX-859(SONY)
IC10	8-751-880-00	CX-188(SONY)
IC11	8-749-938-90	BX-389(SONY)

*S/N 15001 AND LATER (AEP)
*S/N 11401 AND LATER (UK)

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Ref.No.	Parts No.	Description
IC12	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC13	8-759-240-01	TC4001BP(CD4001AE/BE;RCA)
IC14	8-759-240-11	TC4011BP(CD4011AE/BE;RCA)
IC15	8-759-240-53	TC4053BP(CD4053BE;RCA)
IC16	8-759-600-50	CX-150B(SONY)
IC17	8-759-345-38	HD14538BP (MC14538BCP;MOTOROLA)
IC18	8-759-240-13	TC4013BP(TOSHIBA)
IC19	8-759-240-13	TC4013BP(TOSHIBA)
L10	1-420-984-00	AIR-CORE
L28	1-407-168-61	82
L29	1-407-168-61	82
LV1	1-425-879-00	BPT
LV2	1-411-106-00	TUNING-T
LV3	1-425-982-00	BPT
LV4	1-425-880-00	BPT
Q1	8-729-663-47	2SC1364
Q2	8-729-663-47	2SC1364
Q3	8-729-663-47	2SC1364
Q4	8-729-384-48	2SA844
Q5	8-729-384-48	2SA844
Q6	8-724-375-01	2SC403C
Q7	8-729-384-48	2SA844
Q8	8-724-375-01	2SC403C
Q9	8-724-375-01	2SC403C
Q10	8-724-375-01	2SC403C
Q11	8-724-375-01	2SC403C
Q12	8-724-375-01	2SC403C
Q13	8-724-375-01	2SC403C
Q14	8-724-375-01	2SC403C
Q15	8-724-375-01	2SC403C
Q16	8-724-375-01	2SC403C
Q17	8-724-375-01	2SC403C
Q18	8-724-375-01	2SC403C
Q19	8-724-375-01	2SC403C
Q20	8-729-384-48	2SA844
Q21	8-765-212-30	2SA925-23
Q22	8-761-622-00	2SC1636
Q23	8-729-384-48	2SA844
Q24	8-729-384-48	2SA844
Q25	8-729-663-47	2SC1364
Q26	8-729-663-47	2SC1364
Q27	8-729-663-47	2SC1364
Q28	8-729-663-47	2SC1364
Q29	8-729-663-47	2SC1364
Q30	8-729-384-48	2SA844
Q31	8-724-375-01	2SC403C
Q32	8-724-375-01	2SC403C
Q33	8-724-375-01	2SC403C
Q34	8-724-375-01	2SC403C
Q35	8-729-663-47	2SC1364
Q36	8-724-375-01	2SC403C
Q37	8-724-375-01	2SC403C
Q38	8-729-384-48	2SA844
Q39	8-761-622-00	2SC1636
Q40	8-729-384-48	2SA844
Q41	8-729-663-47	2SC1364
Q42	8-729-663-47	2SC1364
Q43	8-729-663-47	2SC1364
Q44	8-724-375-01	2SC403C
Q45	8-729-663-47	2SC1364
Q46	8-729-663-47	2SC1364
Q48	8-724-375-01	2SC403C
Q49	8-724-375-01	2SC403C
Q50	8-724-375-01	2SC403C
Q51	8-724-375-01	2SC403C
Q52	8-724-375-01	2SC403C
Q53	8-724-375-01	2SC403C
Q54	8-724-375-01	2SC403C
Q55	8-729-663-47	2SC1364
Q56	8-729-663-47	2SC1364
Q57	8-761-622-00	2SC1636
Q58	8-761-622-00	2SC1636
Q59	8-729-663-47	2SC1364
Q60	8-729-663-47	2SC1364
Q61	8-724-375-01	2SC403C
Q62	8-729-663-47	2SC1364
Q63	8-729-663-47	2SC1364
Q64	8-724-375-01	2SC403C
Q65	8-724-375-01	2SC403C
Q66	8-724-375-01	2SC403C
Q67	8-724-375-01	2SC403C
Q68	8-724-375-01	2SC403C
Q69	8-729-384-48	2SA844
Q70	8-724-375-01	2SC403C
Q71	8-729-384-48	2SA844
Q72	8-724-375-01	2SC403C
Q73	8-724-375-01	2SC403C
Q74	8-729-384-48	2SA844
Q75	8-729-384-48	2SA844
Q76	8-729-384-48	2SA844
Q77	8-724-375-01	2SC403C
Q78	8-724-375-01	2SC403C
Q79	8-724-375-01	2SC403C
Q80	8-724-375-01	2SC403C
Q81	8-724-375-01	2SC403C

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Ref.No.	Parts No.	Description
R43	1-214-123-00	METAL 430 1% 1/4W
R113	1-214-132-00	METAL 1K 1% 1/4W
R119	1-214-119-00	METAL 300 1% 1/4W
R344	1-244-846-00	CARBON 75 5% 1/2W
RV1	1-224-250-XX	VAR, METAL 2.2K
RV2	1-224-134-XX	VAR, METAL 470K
RV3	1-224-250-XX	VAR, METAL 2.2K
RV4	1-224-252-XX	VAR, METAL 10K
RV5	1-224-251-XX	VAR, METAL 4.7K
RV6	1-224-250-XX	VAR, METAL 2.2K
RV7	1-224-251-XX	VAR, METAL 4.7K
RV8	1-224-251-XX	VAR, METAL 4.7K
RV9	1-224-251-XX	VAR, METAL 4.7K
RV10	1-224-251-XX	VAR, METAL 4.7K
RV11	1-224-254-XX	VAR, METAL 47K
RV12	1-224-250-XX	VAR, METAL 2.2K
RV13	1-224-251-XX	VAR, METAL 4.7K
RV14	1-224-250-XX	VAR, METAL 2.2K
RV15	1-224-253-XX	VAR, METAL 22K
RV16	1-224-251-XX	VAR, METAL 4.7K
RV17	1-224-248-XX	VAR, METAL 470
RV18	1-224-249-XX	VAR, METAL 1K
RV19	1-224-250-XX	VAR, METAL 2.2K
S1	1-552-509-00	DIP"NOISE CANCEL"
X1	1-527-345-00	OSC. 4.433619MHz

SWITCHING REGULATOR

⚠	1-413-075-00	UR-02(C,M,S BOARDS)

C BOARD(IN THE UR-02)

	1-605-679-00	PRINTED CIRCUIT BOARD, C
C301	1-130-652-00	POLYPROPYLENE 3600PF 100V
C302	1-130-018-00	POLYPROPYLENE 1000PF 50V
C305	1-161-632-00	METALLIZED POLYESTER 0.1 50V
C306	1-161-632-00	METALLIZED POLYESTER 0.1 50V

Ref.No.	Parts No.	Description
D301	8-719-200-02	10E-2
D302	8-719-100-70	RD15E-B1
D303	8-719-815-85	1S1585
IC301	8-759-904-94	TL494CN(TI)
Q301	8-729-117-54	2SA1175
⚠ R302	1-247-099-00	NF,CARBON 47 1/4W
RV301	1-226-826-00	VAR,METAL 300(B)

M BOARD(IN THE UR-02)

⚠	1-605-531-00	PRINTED CIRCUIT BOARD, M
⚠	1-564-090-11	5P CONNECTOR PIN
⚠	1-564-163-00	6P CONNECTOR PIN
⚠ C101	1-130-711-00	METALLIZED POLYESTER 0.22 250V
⚠ C102	1-161-738-00	CERAMIC 4700PF 400V
⚠ C103	1-161-738-00	CERAMIC 4700PF 400V
⚠ C104	1-161-738-00	CERAMIC 4700PF 400V
⚠ C105	1-161-738-00	CERAMIC 4700PF 400V
⚠ C106	1-161-742-00	CERAMIC 2200PF 400V
⚠ C107	1-161-742-00	CERAMIC 2200PF 400V
⚠ C108	1-161-742-00	CERAMIC 2200PF 400V
⚠ C109	1-161-742-00	CERAMIC 2200PF 400V

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Ref. No.	Parts No.	Description
C111	1-125-268-00	ELECT 47 400V
C112	1-125-267-00	ELECT 300 400V
C113	1-123-659-00	ELECT 4.7 250V
C114	1-123-659-00	ELECT 4.7 250V
C115	1-130-808-00	METALLIZED POLYESTER 0.22 400V
C201	1-161-913-00	CERAMIC 680PF 500V
C204	1-161-913-00	CERAMIC 680PF 500V
C205	1-108-868-00	POLYESTER 0.047 50V
C206	1-161-632-00	METALLIZED POLYESTER 0.1 50V
C207	1-161-632-00	METALLIZED POLYESTER 0.1 50V
C208	1-161-632-00	METALLIZED POLYESTER 0.1 50V
C210	1-123-326-00	ELECT 3300 16V
C211	1-123-326-00	ELECT 3300 16V
C212	1-123-326-00	ELECT 3300 16V
C213	1-123-326-00	ELECT 3300 16V
C214	1-161-632-00	METALLIZED POLYESTER 0.1 50V
C215	1-161-925-00	CERAMIC 100PF 500V
C217	1-161-915-00	CERAMIC 1000PF 500V
C218	1-161-915-00	CERAMIC 1000PF 500V
⚠ CN101	1-560-437-00	4P AC IN
CN201	1-560-438-00	5P OUT
⚠ D101	8-719-136-00	AC03FGMR
⚠ D102	8-719-911-55	U05G
⚠ D103	8-719-911-55	U05G
⚠ D104	8-719-911-55	U05G
⚠ D105	8-719-911-55	U05G
D201	8-719-903-02	ESAC33-02C
D202	8-719-903-02	ESAC33-02C
D203	8-719-903-02	ESAC33-02C
D204	8-719-111-44	F114D
D205	8-719-100-70	RD15E-B1
D206	8-719-200-02	10E-2

Ref. No.	Parts No.	Description
⚠ F101	1-532-604-00	THERMAL 5A, 250V, 126°C
⚠ L101	1-459-215-00	CHOKE
L102	1-459-215-00	CHOKE
L201	1-421-398-00	CHOKE
L202	1-421-370-00	CHOKE
L203	1-421-431-00	CHOKE
⚠ Q101	8-729-993-83	2SC2938
⚠ Q102	8-729-993-83	2SC2938
Q201	8-729-331-53	2SC2315
⚠ R101	1-205-631-00	NF, CEMENT 15 5W
⚠ R103	1-247-087-00	NF, CARBON 15 1/4W
⚠ R104	1-247-087-00	NF, CARBON 15 1/4W
⚠ R107	1-247-103-00	NF, CARBON 68 1/4W
⚠ R201	1-205-641-00	NF, CEMENT 330 5W
R202	1-535-369-00	20mOHM, 2W
⚠ R204	1-202-860-00	NF, SOLID 100 1/4W
R205	1-535-369-00	20mOHM, 2W
⚠ R206	1-247-090-00	NF, CARBON 20 1/4W
R207	1-532-605-00	CURRENT FUSE, 400mA
⚠ R208	1-202-860-00	NF, SOLID 100 1/4W
R209	1-202-860-00	NF, SOLID 100 1/4W
⚠ T101	1-447-052-00	MAIN CONVERTER
⚠ T102	1-421-468-00	LINE FILTER

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UR-02(M), (S), FRAME

Ref. No.	Parts No.	Description
⚠ T103	1-447-106-00	DRIVE
⚠ T104	1-447-053-00	STARTER
T201	1-421-467-00	CHOKE

S BOARD (IN THE UR-02)

⚠	1-605-532-00	PRINTED CIRCUIT BOARD, S
C001	1-108-833-00	POLYESTER 4700PF 50V
⚠ D001	8-719-900-95	V09G
⚠ D002	8-719-900-95	V09G
⚠ D003	8-719-151-07	RD5.1E-B
⚠ D004	8-719-815-85	1S1585
⚠ D005	8-719-815-85	1S1585
⚠ D006	8-719-815-85	1S1585
⚠ D007	8-719-815-85	1S1585
⚠ D008	8-719-100-24	RD4.3E-B3
⚠ Q001	8-729-175-22	2SC2752
⚠ Q002	8-729-115-64	2SA1156
⚠ Q003	8-729-100-13	2SC2001

Ref.No.	Parts No.	Description
⚠ R003	1-247-115-00	NF, CARBON 220 1/4W
⚠ R004	1-247-115-00	NF, CARBON 220 1/4W
⚠ R005	1-247-103-00	NF, CARBON 68 1/4W

FRAME

⚠	1-413-075-00	SWITCHING REGULATOR (UR-02)
	1-226-996-21	ROTARY ENCODER
	1-526-559-00	SOCKET FOR POWER TR
⚠ CN1001	1-509-546-00	3P AC IN
CN1005	1-509-891-00	RECEPTACLE BNC "VIDEO-1 IN"
CN1006	1-509-891-00	RECEPTACLE BNC "VIDEO-2 IN"
CN1007	1-508-945-00	RECEPTACLE,7P MALE "DUB IN"
CN1008	1-561-045-00	RECEPTACLE,7P FEMALE "DUB OUT"
CN1011	1-509-891-00	RECEPTACLE BNC "VIDEO OUT"
CN1013	1-507-732-00	AUDIO LINE CH-1/L IN
CN1014		AUDIO LINE CH-2/R IN
CN1015	1-507-251-XX	JACK,JM-35 M-10 "AUDIO MONITOR"
CN1016	1-507-732-00	AUDIO LINE CH-1/L OUT
CN1017		AUDIO LINE CH-2/R OUT
CN1018	1-507-473-XX	JACK,JM-35 M-7A "RX-DATA"
CN1019	1-507-733-00	JACK"MIC IN"CH-1
CN1020	1-507-733-00	JACK"MIC IN"CH-2
CN1021	1-507-553-00	JACK"HEADPHONES"
CN1022	1-509-891-00	RECEPTACLE BNC "EXT SC IN"
CN1024	1-561-671-00	RECEPTACLE,8P FEMALE "TV"
	1-560-553-00	CONTACT
CN1025	1-561-583-00	RECEPTACLE,33P FEMALE "REMOTE"
CN1026	1-560-403-00	RECEPTACLE,6P FEMALE "RF MOD"
CN1027	1-555-977-00	F RECEPTACLE "RF OUT"
CS1001	1-586-633-00	CONDENSATION SENSOR

NOTES:

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Ref.No.	Parts No.	Description
H1001	A-6709-400-A	DRUM ASSY UPPER "DUR-23-R"
H1003	8-825-513-20	EPP170-58 "CTL PB/FULL ERASE"
H1004	8-829-358-31	EPP150-5803B"AUDIO ERASE/CTL R/P/AUDIO R/P"
M1001	A-6709-392-A	HEAD DRUM ASSY "DUH-23A-R"
M1002	8-838-019-01	BHF-1600A"CAPSTAN"
M1003	8-835-047-01	MNR-4000A"REEL"
M1004	8-835-056-01	DNR-1002A"THREADING"
M1005	8-835-055-01	DNR-4700A"CASSETTE COMPARTMENT"
ME1001	1-520-393-00	AUDIO CH-1
ME1002	1-520-393-00	AUDIO CH-2
PL1001	1-518-508-00	12V,55mA"CASSETTE COMPARTMENT"
PL1002	1-518-508-00	12V,55mA"CASSETTE COMPARTMENT"
PL1003	1-518-508-00	12V,55mA"CASSETTE COMPARTMENT"
PM1001	1-454-285-00	12V,8/52 ohm"TAKE-UP IDLER"
PM1002	1-454-284-00	12V,10/90 ohm"TAKE UP BRAKE"
PM1003	1-454-284-00	12V,10/90 ohm"REW, FF SEARCH"
PM1004	1-454-285-00	12V,8/52 ohm"SUPPLY IDLER"
PM1005	1-454-284-00	12V,10/90 ohm"SUPPLY BRAKE"
PM1006	1-454-283-00	12V,80 ohm"SKEW"
PM1007	1-454-284-00	12V,10/90 ohm"SEARCH"
PM1008	1-454-286-00	12V,6/35 ohm"PINCH"
Q1001	8-760-222-01	2SA762
Q1002	8-760-222-01	2SA762
Q1003	8-729-325-76	2SD257
Q1004	8-729-325-76	2SD257

Ref.No.	Parts No.	Description
R1001	1-207-619-00	WIREWOUND 0.82 10% 3W
RV1001	1-228-218-00	VAR,CARBON 500/500 "HEADPHONES"
⚠S1001	1-553-159-00	ROCKER"POWER"
S1002	1-516-779-XX	SLIDE"TBC"
S1003	1-516-781-XX	SLIDE"COLOR LOCK"
S1004	1-553-789-00	SLIDE "TIMER"
S1005	1-516-779-XX	SLIDE"SYSTEM SELECT"
S1006	1-516-779-XX	SLIDE"MONITOR TV"

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14-4. PACKING MATERIAL AND ACCESSORY (SUPPLIED)

1-534-698-XX	**CORD,POWER**
3-667-823-00	CARTON,INDIVIDUAL
3-672-714-00	CUSHION(UPPER, REAR)
3-672-715-00	CUSHION(UPPER, FRONT)
3-672-716-00	CUSHION(LOWER, REAR)
3-672-717-00	CUSHION(LOWER, FRONT)
3-672-720-00	BAG,PROTECTION
3-701-632-00	**BAG,POLY(FOR MANUAL)**
⚠ 3-783-621-13	**MANUAL,INSTRUCTION**

14-5. FIXTURE (OPTIONAL)

J-6001-820-A	**DRUM ECCENTRICITY GAUGE (3)**
J-6001-830-A	**DRUM ECCENTRICITY GAUGE (2)**
J-6001-840-A	**DRUM ECCENTRICITY GAUGE (1)**
J-6001-930-A	**DRUM ECCENTRICITY GAUGE (4)**
J-6002-290-A	**DIHEDRAL ADJUSTING SCREW**
J-6009-830-A	**FLATNESS PLATE**
J-6130-010-A	**REEL TABLE HEIGHT CHECK BASE JIG**
J-6130-020-A	**REEL TABLE HEIGHT CHECK JIG**
J-6150-020-A	**PINCH LEVER ADJUSTMENT JIG**
Y-2031-001-0	**CLEANING FLUID**
2-034-697-00	**CLEANING PIECE**
3-702-215-01	**TORQUE MEASUREMENT TAPE (100mm DIA)**
3-702-216-01	**BACK TENSION ADJUSTMENT JIG**
7-661-018-01	**SONY OIL**
7-732-050-20	**TENSION SCALE(50g FULL SCALE)**
7-732-050-30	**TENSION SCALE(100g FULL SCALE)**
7-732-050-40	**TENSION SCALE(200g FULL SCALE)**
7-732-050-50	**TENSION SCALE(500g FULL SCALE)**
8-960-035-61	**ALIGNMENT TAPE,RR5-2SC PAL**
9-911-053-00	**THICKNESS GAUGE**

Standard products Head Demagnetizer,HE-4

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